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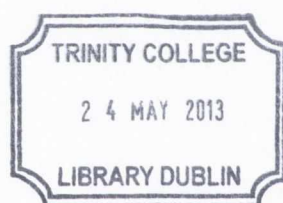
Women's descriptive representation in national parliaments

PhD Thesis

2013

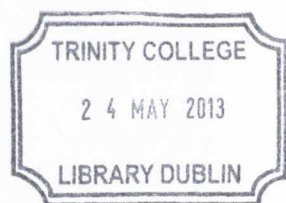
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Declaration

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Summary

This dissertation studies the descriptive (i.e. numeric) representation of women in national parliaments in three related but independent papers. The empirical analysis presented in the papers is based on two original data sets. The first, macro level data set covers the democratic elections of 75 nations between the years 1980 and 2010. A subset of these data covering the OECD nations is augmented to include a set of socioeconomic variables that were not available for other countries. The second data set is a collection of candidate data from six Estonian elections between the years 1992 and 2011. The papers use a variety of quantitative techniques to support the theoretical claims made in them.

The first paper of this dissertation is focused on the effect of socioeconomic conditions on women's representation and uses time-series cross-section data from the OECD nations. The paper starts by arguing that while some authors have used welfare state spending to predict women's representation, this is very problematic because welfare spending is endogenous to women's representation. Empirically, this will be shown by using structural equation modeling. The paper then turns to possible welfare state outcomes that could impact representation and uses income inequality as an instrument for welfare state spending and type. The empirical analysis here uses dynamic panel models and three different measures of income inequalities. The evidence suggests that income inequalities decrease women's representation. The decrease is significant but small initially, but grows substantially over the subsequent elections.

The second paper focuses on electoral institutions such as district magnitudes, quotas and personal vote incentives. This paper uses dynamic panel models and data from 75 democracies. It is argued that the effect of each institution on women's representation is conditional on other institutions, but also on factors such as public attitudes. The paper finds that legal quotas are most effective in increasing women's representation in party centered electoral systems and their effect is halved in candidate centered systems. In addition the results show that (1) both weak and strict legal quotas can be equally effective tools for increasing women's representation, and, (2) personal vote incentives do not have an independent effect on women's representation. The paper then tests whether the positive effect of large district magnitudes on women's representation is conditional on public attitudes. The empirical analysts of two sets of cross-section

data confirms the expectation – district magnitudes increase representation in countries where fewer people believe that “men make better leaders”.

The last of these papers analyzes the effect of gender on candidate’s vote share, election probability from open lists and placement in closed lists in Estonia over the course of six elections. The paper uses candidate level data. The results show that while women are sometimes associated with fewer votes, this gender gap in vote shares is driven by a large group of weak candidates among whom women do much worse than men. There is no gender vote gap among the more successful candidates. For this reason we also find that gender does not have an effect on election probabilities from open lists – male and female candidates are equally likely to win a seat. The paper does however find that women are consistently placed lower in the closed national lists. This supports the notion that parties do not use closed lists to promote women’s bid for office in Estonia.

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CHAPTER 1

Introduction

In his 1976 book *The Comparative Study of Political Elites* Robert Putnam wrote that the political elite comes disproportionately from the upper social classes (the wealthy and well educated) and often belong to the ethnic and religious majorities. He added that “women are the most underrepresented group in the political elites of the world” (Putnam, 1976, 32). Nearly four decades have passed, and though the political elites are more diverse than ever, they are still disproportionately male, majority and upper class. But while in the 1970s women were underrepresented uniformly in all countries, there is much more variation in the representation of women today. Women hold nearly half the seats in Finland and South Africa, while in Japan and South Korea the percent of female legislators is still 10-15. Why have some wealthy established democracies such as Finland been able almost reach parity in political representation, while in others, like Japan, women’s representation has seen virtually no change in past 30-40 years? What explains the rapid success of female representatives in some new and less developed democracies such as South Africa and why have others, like South Korea, not been able to achieve the same? This dissertation studies the underrepresentation of women in the national parliaments of democracies.

1.1. The presence of women: Why should we care?

The field of women’s political representation is generally divided into research on descriptive and substantive representation. Descriptive representation refers to the numeric representation of women among the political elite – e.g. the percent of women in national parliaments, in cabinets and among the party executives. The substantive representation field studies the representation of women’s interest, whether the legislation passed is in the interest of women. This dissertation is for the most part concerned with the descriptive representation of women in national parliaments, but briefly also discusses some aspects of substantive representation in the first of the three papers.¹

There are many reasons why researchers are concerned with women’s parliamentary representation. For one thing, descriptive representation has often been seen as a necessary condition for substantive representation. But women’s representation is important

¹Unless otherwise specified, the term “women’s representation” is taken to mean descriptive representation in this dissertation.

also from the perspective of democratic legitimacy. Further, studying the causes of underrepresentation of one social group can also help us understand the reasons why other groups – ethnic, racial or religious minorities, the lower social classes – find it so difficult to achieve proportional presence in politics.

As the women's suffrage movement grew in the mid 19th century, John Stuart Mill was one of the most famous social philosophers and politicians of the time to argue for women's representation in parliament. He believed that the legal subordination of one sex to the other is "wrong in itself, and now one of the chief hindrances to human improvement" (Mill, 1988, 1). Unlike many at the time, he also argued that women do possess the abilities and qualities necessary to hold political office. More than a century later scholars still emphasize the importance of descriptive representation. For example, Anne Phillips argues that experience and identities are related to social groups and because of this the representation of these experiences, beliefs etc. is impossible without the inclusion of these groups. This "politics of presence" is especially important when considering new issues and policies. She writes that "in order to achieve more fair and adequate representation of those interest that were not explicitly consulted or debated during election campaigns, as well as more vigorous advocacy at the moment of final decision, it is vital to achieve that additional element of representation which arises from the presence of previously excluded groups" (Phillips, 1995, 45).

What Anne Phillips and many other scholars suggest is that descriptive representation is strongly associated with substantive representation. Many studies have indeed found that female legislators have different views, vote differently, address new issues or affect the way some issues are seen (Celis, 2006; Poggione, 2004; Schwindt-Bayer, 2006; Wängnerud, 2000a). Particularly important has been the impact of women's presence on raising and discussing issues previously excluded from the parliamentary discussions. For example, Goetz (1998) finds that women representatives in Africa have been most successful in raising and legitimizing issues such as violence against women and improving legislation on domestic abuse. No less important has been female representatives role in building awareness among women about their rights (Goetz, 1998) and some argue that women demonstrate greater knowledge and interest in politics in districts with more female legislators (Campbell and Wolbrecht, 2006).

While the above works report on the advantages to women, diverse representation also benefits the whole society. Because democracy today is understood as a system of governance representative of all the various social groups of the society, diversity and women's representation can serve to legitimize the democratic system in a way that an all-male legislatures cannot (Darcy, Welch and Clark, 1994, 18). To support this, studies have found that a high percentage of female representatives is associated with more confidence in, and positive evaluations of, the democratic process among both sexes (Schwindt-Bayer and Mishler, 2005; Karp and Banducci, 2008). Women's

entrance into politics also serves to increase competition to political office and improve the quality of political leadership (Darcy, Welch and Clark, 1994, 17)

Studying women's representation can also help us understand the obstacles to the representation of minorities and lower social classes. For example, the research on electoral system has frequently argued that single member districts (SMD) can be just as limiting for women's representation as well as for racial and ethnic minorities (Taagepera and Shugart, 1989; Rule and Zimmerman, 1994). New institutions, such as quotas, are now frequently adopted to improve the representation of women, but also minorities. The growing research on gender quotas can help policy makers also draw conclusions about the effect affirmative action has on representation of other groups and how to combine quotas for women and minorities (Hughes, 2011). Similarly, what we learn about the effect of socioeconomic conditions on women's political representation can give us insights into how employment, poverty and development can affect the representation of minorities.

1.2. Three papers on women's representation: A look ahead

Previous work in the area of women's descriptive representation has identified socioeconomic conditions and institutions as major factors affecting the percent of female representatives. This dissertation explores these causes of underrepresentation and finds that while researchers have been correct to point these out, we still do not have a full picture of how institutions or socioeconomic conditions shape representation. In this dissertation I hope to specify the relationship between socioeconomic conditions, institutions and women's representation further.

The first of the three papers focuses on the effect of socioeconomic conditions on women's political representation. Thus far work on socioeconomic conditions has focused on the effects of development, female employment and in some cases also on welfare spending. I argue that there are two major problems with the current line of research. First, welfare spending is highly endogenous to women's political representation – female legislators are more likely than their male counterparts to support welfare expansion. Thus women's representation could also affect welfare spending. Secondly, instead of focusing mostly on economic development and female employment levels researchers should be also concerned with the distribution of wealth and the low-pay incidence among women. I argue that countries with high income inequalities have fewer female representatives because in those nations more women are likely to be stuck in traditional gender roles and work at low-paid and low-skilled jobs, both of which are not conducive to political representation. This paper contributes to the field of descriptive representation by clearly showing that the unequal distribution of wealth has major political consequences for women's representation.

The second paper focuses on electoral institutions and argues that instead of existing in isolation, different electoral institutions interact with each other and with the norms prevalent in a society to shape women's legislative seat shares. Electoral rules that increase personal vote incentives are not necessarily beneficial for women on their own, but can mediate the effect of legal quotas – e.g. quotas can be more effective under weak personal vote incentives. Also, proportional electoral systems increase women's representation when the public attitudes on female leadership are supportive, but have no effect on the percentage of seats held by women in the parliament when there is little support for women's involvement in politics. Overall, the paper underscores the importance of analyzing the effects of various institutions and culture in unison. Rather than having independent isolated effects, the success of institutions in increasing women's representation is conditional on other factors.

The third paper is also focused on institutions, but differs from the other papers as it studies women's representation at the level of candidates. While some previous work has suggested that open lists affect women's electoral fortunes adversely, I find that in general gender has no effect on candidates' vote shares or election probabilities. On the contrary, the data suggests that women are less likely to be placed in electable positions on closed party lists. Thus women's representation cannot necessarily be improved simply by switching from open to closed lists.

In terms of methodology and modeling the dissertation makes a major departure from previous work. I have put greater emphasis on model building, improving the fit between theory and empirical models. For this reason the dissertation also models women's representation as a dynamic process, where the effect of explanatory variables on women's representation can be distributed over time. Unlike previously, we can now see how the different factors increase or decrease women's political representation over consecutive elections – whether a variable impacts representation immediately or whether the full effect builds up over a longer period time. The first two papers use macro level time-series cross-section (TSCS) data. In the first paper the cases are limited to the OECD nations. The second paper cover the democratic elections of 75 countries between the years 1980 and 2010, making it the broadest macro-level panel study in the field. The third papers uses candidate data from the six parliamentary elections of Estonia.

The dissertation is organized as follows. In the next chapter I give a general review of the literature on women's representation, in which I point out current shortcomings and the contribution of the three papers to follow. Chapter 3 will then discuss case selection and the technical issues with regard to measurement and the modeling time-series-cross-section data. These introductory chapters will then be followed by the three independent but related papers that form the core of the dissertation (Chapters

4-6). The dissertation ends with a conclusions chapter that reviews all the major contributions made by this work.

CHAPTER 2

Women in national parliaments: The state of the field

The literature on women’s descriptive representation is quite voluminous. The substantial interest in the question can be understood when looking at women’s representation has changed over the years and how it varies between countries. Figure 1 shows how women’s representation has changed over the past 60 years in the national parliaments of democracies. While in the middle of the 20th century women were consistently underrepresented in all parliaments, major differences started to emerge in late 1970s and in the 1990s. Sweden and Finland are among countries that exemplify the first major increase – the gradual but steady rise in representation that took about four decades to reach parity. Argentina is an example of a country that started using quotas during the 1990s and has achieved substantial increases in representation over just a few elections.

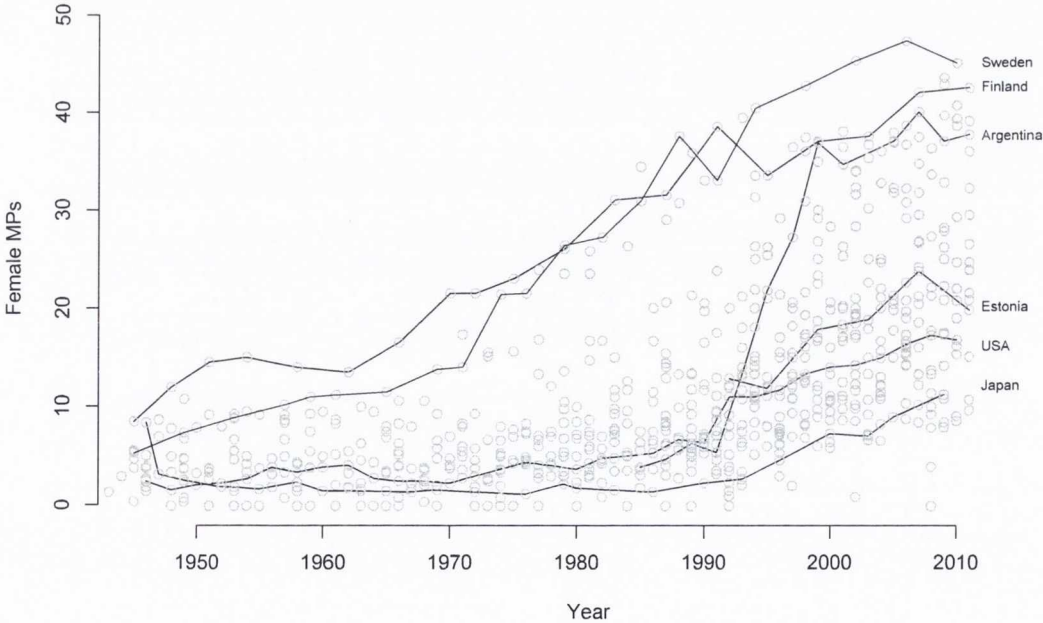


FIGURE 1. Women’s representation in the national parliaments of democracies, 1945-2010

The three other countries – Estonia, United States and Japan – show only modest increases in representation. Regardless of the differences in the cultural, socioeconomic

and institutional settings of these countries women legislators hold only 10-20% of seats. But as the multiple other data points in Figure 1 show, the three countries are in no way an exception, but rather a rule. In most democracies women still hold less than a quarter of the seats. Why is it that Estonia, USA, Japan and so many other countries have not been able to follow the paths of Sweden, Finland or Argentina? What distinguishes the countries with high female representation from those where women are still in an overwhelming minority?

A number of theories have emerged to explain this variation in the percent of female MPs. Three major strands of theories – women's socioeconomic conditions, electoral institutions, culture – stand out as most frequently recited, retested and, for the most part, reaffirmed. The following pages review the three main theories, but some of the more nuanced issues are addressed in the three papers. Aside from the three main theoretical explanations there are also a number of less known hypotheses. The importance of these will be assessed at the end of this chapter.

2.1. Socioeconomic conditions

Running for office takes considerable resource. The specific type of resources required depends on the electoral institutions – in candidate centered systems financial and fundraising capabilities are more important than in party centered systems, while in the latter the time spent working for the party may be more prominent. Being a member of a prestigious profession or an elite (e.g. economic or educational) is nearly always beneficial, regardless the system. Whatever the resources necessary, eventually they all will almost certainly come down to the socioeconomic position of the contender. Even contributing time to volunteer for a party requires flexible working hours and/or the ability of being free from family duties, both of which are related to socioeconomic status.

Because, on average, men enjoy a higher socioeconomic status than women, they are better placed in terms of resources to successfully run for political office. Women's under representation in national parliaments may thus be the result of gender specific socioeconomic inequalities. The literature on women's descriptive representation has captured these differences in socioeconomic status in three major ways – by accounting for the effects of economic development, female employment and education levels, and, most recently, welfare state spending.

The theoretical link between economic development and gender equality is most strongly stated by the modernization and neoclassical economic approach (for a good overview see Forsythe, Korzeniewicz and Durrant, 2000). According to this literature, discriminatory practices can be overcome by the process of economic growth – modernization and market expansion. Open markets and modernization make discriminatory

practices costly and rely on achievement rather than ascribed status as a basis for resource allocation. Thus with more economic development women's socioeconomic status should improve and they should be more able to enter politics. Or as Inglehart and Norris (2003, 4) add: "Growth was seen as the panacea that would lift all boats".

The importance of the modernization and economic growth literature has ensured that measures of economic development are frequently included in models predicting women's parliamentary representation. Matland (1998) echoes the above ideas arguing that processes accompanying development (e.g. weakened traditional values, decreased fertility, increased female education levels and labor force participation) should increase women's resources and help decrease barriers to political office. Paxton (1997) adds that development frees up time to be politically active, increasing the supply of women who can contest elections. In addition, she further suggests that economic development is indicative of democratic development – female representation should be higher in most advanced democracies. The empirical effect of development is, however, highly contested. While a few report the effect of development to be statistically significant and positive (Paxton, 1997; Iversen and Rosenbluth, 2008), most conclude it is absent (Kenworthy and Malami, 1999; Paxton and Kunovich, 2003; Kunovich and Paxton, 2005; Stockemer, 2009, 2011).

Of course, economic development provides a vague measure of gendered division of resources. Women's educational attainment and share in the paid labor force capture the differences in the socioeconomic conditions between genders more accurately. But again, while most authors agree that increase in female employment should make women more politically active, improve their status, change traditional gender roles, raise women's consciousness and demands for parliamentary representation (e.g. see Oakes and Almquist, 1993; Togeby, 1994; Matland, 1998; Stockemer, 2011; Stockemer and Byrne, 2011), the empirical evidence is less than convincing. A review by Stockemer and Byrne (2011) shows that employment levels are a statistically significant predictor of women's representation in less than half of the studies.

The theoretical underpinnings of the development and employment approach have also become under growing criticism (Inglehart and Norris, 2003, 4-5). According to the gender and development literature the neoclassical theory is flawed because inequalities may stem from institutional arrangements (e.g. family structure, division of labor at home) impervious to economic growth (Forsythe, Korzeniewicz and Durrant, 2000). Economic development may lead to higher levels of education or employment for women, but these changes do not necessarily translate into an increase in women's *authority*.

Because of the theoretical shortcomings and the empirical results are so inconsistent, researchers have of course asked when and why do development and employment matter for women's representation. While development may not have a direct effect on representation, Viterna, Fallon and Beckfield (2008) suggest that it can effect representation indirectly, mediating the effect of other factors.¹ Matland (1998), for example, argues that employment does not have the same empowering and consciousness raising effect in developing democracies because in those countries women are more often employed in subsistence-level low skilled work. Kunovich and Paxton (2005) agree and add that without information on the *types* of employment, it is "unclear whether women are gaining politically relevant human capital from their job or are simply working too many hours to find the time to participate politically". For this reason a few studies have preferred to measure women's share only in professional occupations (Oakes and Almquist, 1993; Kenworthy and Malami, 1999; Viterna, Fallon and Beckfield, 2008), but because this measure is difficult to obtain for larger panel studies, most have continued to use overall female employment.

A smaller body of work also argues that welfare state type and the "size of government" directly affect women's representation. The specific theoretical mechanisms advanced vary, but central to many are again resources that welfare states provide, but also the way welfare policies frame women's roles and expertise (Rule, 1981; Siaroff, 2000; Rosenbluth, Salmond and Thies, 2006; McDonagh, 2010). While the effect of welfare spending on female representation is reasonable, the literature on women's substantive representation argues the opposite – women's seat share in the parliament effects social policy. Female legislators are more likely to be on the ideological left and support welfare expansion (Bolzendahl and Brooks, 2007; Poggione, 2004; Schwindt-Bayer, 2006). (A closer examination of all these ideas is provided in the first paper.)

The two literatures of descriptive and substantive representation conflict, suggesting directly opposite causal directions between women's parliamentary representation and welfare policies. This is, of course, an interesting and an important puzzle to solve. For one thing, female legislators' support for welfare expansion is one of the strongest findings of the substantive representation literature. If the causality turns out to be reversed, a core argument for descriptive representation falls out. The first paper of this dissertation opens with this question of causality and concludes that the effect is more likely to run from female legislators to welfare policies, that is, in the direction suggested by the substantive representation field.

¹Particularly, Viterna, Fallon and Beckfield (2008) argue that women's entrance into the labor market is more empowering for women in developing nations, which is contrary to what is claimed by most other research. The empirical evidence they reference to support this is, however, questionable. Viterna et al do not actually show that female employment is insignificant in developed nations, nor do they find that the variable is particularly significant in less developed countries.

The second problem is that researchers have assumed that all women benefit from development and employment equally within a single country. However, there is increasing evidence to suggest that the potential benefits of economic development and employment on gender equality at home and at work are primarily enjoyed by the upper class women and the women of the lower classes are still frequently stuck in traditional gender roles (Korpi, Ferrarini and Englund, Forthcoming; Esping-Andersen, 2009). Gender equality appears also to be more stratified in countries with higher income inequalities, where more women are stuck in low-paid, low-skill jobs.

In the first paper presented here I argue that because the stratification of gender equality is highest in countries with higher income inequalities, women's political representation in those countries should be lower. High income inequalities mean that many women will not have experienced the type of social change that development and employment should have ushered in. The participation of the lower class women in the public sphere is limited because they are less likely to have the resources (e.g. time, skills and money) to be politically active. Previous research has missed this because there is a tendency to think of socioeconomic conditions in terms of economic development (e.g. GDP), but not in terms of, say, the distribution of wealth. The dissertation will make a significant contribution to the literature, by considering socioeconomic development more broadly, and showing that income inequalities can over time have major consequences for women's political representation.

2.2. Electoral institutions

No research on representation can ignore the effect of institutions – the various aspects of electoral systems, party systems and legislation on affirmative action. The dissertation refers to these collectively as electoral institutions. Of all these institutions the effect of electoral systems on women's representation is probably the most researched in the literature. The association between proportional representation (PR) systems and higher level of female parliamentarians caught the attention of political scientists decades ago (Duverger, 1955; Rule, 1981, 1987; Taagepera and Shugart, 1989) and has since been frequently tested and confirmed by many others (Matland, 1993; Salmond, 2006; Paxton, Hughes and Painter, 2010, to name a few).

Two major theoretical mechanisms have been proposed to explain the positive effect of PR systems – the first relating to the large district magnitudes, the second to the weak personal vote incentives provided by most PR systems. Most of the literature has focused on the former (e.g. Engstrom, 1987; Matland and Brown, 1992). In PR systems parties nominate multiple candidates in each district. To appeal to a wider voter base, parties can choose to “balance” lists by including, for example, women and minorities, and, while the party frontrunners will still usually be male and majority,

the second and third positions may often be held by female candidates. As districts become larger, the number of seats a party wins from a district usually increases. It is this increase in party magnitudes together with the balanced lists that help women win seats in parliaments. The more seats a party wins in a district, the more chances there are for female candidates to gain representation.

Critics, however, point out that when party systems are factionalized, PR should lose its comparative advantage over single member districts (SMD) (Matland, 1993; Darcy, Welch and Clark, 1994). In a factionalized PR system many parties win very few seats in districts. In other words, the party magnitudes will be small in any single district, making them more similar to SMD systems. The smaller the party magnitudes, the less likely that second and lower placed candidates get elected and so the positive effect PR has on women should be reduced.

Until recent decades, most PR systems also made voters choose between parties rather than candidates. These closed list PR systems are frequently called party centered – the center of the electoral contest is the differences between parties and not candidates' personal traits. In contrast the SMD, single transferrable vote (STV) and single non-transferable vote (SNTV) systems are called candidate centered, as the focus of the electoral contest may be more on the candidate. Systems where candidates are highly visible can reduce women's representation compared to the party centered systems because "parties may be hesitant to nominate women as such nominations can reduce the party's likelihood of electoral success" (Thames and Williams, 2010). Some studies have indeed found that countries using closed lists and weaker personal vote incentives nominate and elect more females than open list systems (Kenworthy and Malami, 1999; Thames and Williams, 2010; Valdini, 2012). But there is evidence also to show that closed lists do not increase representation and women perform equally well under open lists (e.g. see Schmidt, 2009).

In recent decades, various methods of affirmative action to improve women's parliamentary representation have become widespread, and today more than a hundred countries use some form of gender quota (Krook, 2009, 3-4). This, of course, has resulted in extensive academic interest in their effectiveness to increase women's representation. Scholars agree that the usefulness of quotas depend on their type, size, enforcement rules, compatibility with political norms, but also on how they mesh with the electoral system, and, the willingness of the parties involved (Schwindt-Bayer, 2009; Krook, Lovenduski and Squires, 2009; Dahlerup, 2006). Jones (2009) for example argues that quotas can be more effective in party-centered closed-list systems where voters cannot reorder candidates. The important conclusion here is that institutions interact to increase women's representation. This, as the dissertation will show, is no small matter.

Though electoral institutions have been extensively researched, I argue that we have still much more to learn about them, particularly about how institutions work together and with other interfering factors such as culture to impact women's representation. This is the central theme of the second paper of this dissertation. My argument is that many of the discrepancies in empirics can be explained away if we acknowledge that the effect of each electoral institution is conditional on other institutions, but also on dominant public attitudes.

The third paper also focuses on institutions and asks whether female candidates are disadvantaged in open lists as compared to closed lists. The studies that argue that personal vote incentives decrease women's electoral chances make the implicit assumption that voters might be biased against women. Using candidate level data the dissertation shows that gender has no effect on votes or election probability from open lists. Contrary to what has been hypothesized about the positive effect of closed lists the paper finds that women can actually be disadvantaged in getting elected from the closed lists.

Since the papers that follow devote little attention to parties, their potential impact on women's representation and the reasons for excluding them from the macro level papers should be discussed here. Parties are often, if not always, the gatekeepers for candidate selection and can so directly affect women's representation through legislative recruitment. While research on party specific effects and/or using party level data is not very extensive, interest in this area has increased in past years. Attention has been paid to both the effects of party ideology and organizational characteristics.

One of the earliest working hypothesis was that social democratic parties, due to their fundamental ideological emphasis on equality, recruit and facilitate the election more women candidates (Reynolds, 1999; Kenworthy and Malami, 1999). As with many other hypotheses in the field, the evidence is mixed (e.g. contrast the findings by Caul (1999) and Holmsten, Moser and Slosar (2010) who find support for this to Kittilson (2006, 124) who does not). Some of the discrepancies may be the result of different codings of left and right, but the varying results may also reflect dynamics and depend on case selection. For example, between the years 1975-1981 socialist parties had, on average, fewer female representatives than rural or conservative parties, but the situation then changed, and during 1990-1997 socialist parties had more female representatives (Kittilson, 2006, 8-9). There is also some evidence that ethnic parties, especially those appealing to a religious minority, elect fewer women (e.g. see Holmsten, Moser and Slosar (2010) and also to an extent Kittilson (2006, 8)).

It has also been argued that parties' organizational characteristics such as centralization (the dispersion of power and decision making within the party), formalization (to

what extent the rules are informal and tacit or rule-governed and explicit), factionalization (the strength of ties with outside groups) and pragmatism (level of adherence to ideology) may impact women's representation (Caul, 1999; Norris and Lovenduski, 1995; Kittilson, 2006). But the theoretical foundations here are somewhat weak and sometimes seem to be crafted solely to fit the empirics. For example, Kittilson (2006, 47) first writes that "strong ties to outside groups will impede a party's ability to incorporate women into it's higher ranks." But after data analysis concludes that "parties with ties to outside groups provide more points of access, so that women can climb to positions of power" (2006, 49).² The theories reflect more the idiosyncrasies of the particular piece of evidence, rather than providing a convincing argument why any organizational aspect is fundamentally more beneficial to women's representation.

There is also empirical evidence that the proportion of women in top party ranks are related to higher level of female candidates and party delegates (Caul, 1999; Kunovich and Paxton, 2005; Kittilson, 2006, 124). Theoretically, women's involvement in parties increases the pool of eligibles and, as they enter the higher ranks, women can pressure directly for parliamentary representation (Caul, 1999). It is worth noting though, that many of the macro level factors that affect women's representation at the national level, such as dominant attitudes and women's socioeconomic position, may also affect the percentage of women among party executives. In other words, the most fundamental causes of women's representation may still be the macro level conditions. Kunovich and Paxton (2005) provide some support for this, but other similar studies have not controlled for the country level effects.

The dissertation will come back to the importance of party ideology and women's presence among the party elite in the candidate level paper, where the level of analysis (candidate data) is more suited to analyzing the effects of party ideology. Party characteristics are excluded from the macro level analysis because of the weaknesses in the mentioned theories and also feasibility. First, the left-right scores of party ideology makes little sense in some countries where politics is dominated by other issues (e.g. ethnic divisions) and the hypotheses on party organizational characteristics are not very robust. Secondly, the data collection poses major obstacle, as party level data is difficult to obtain for some African and Asian countries. While previously published research and sources such as Comparative Manifesto Project can help overcome the issue for some countries, many smaller democracies are not covered by these sources.

²Contrast also Norris and Lovenduski (1995), who argue that the British Labour party has more female candidates and elected MPs than the Conservatives due to the formers less centralized control over decision making, to Kittilson's (2006, 120) statement that "without a centralized and coordinated effort Labour Party would have failed to coerce local constituencies into nominating women". The theory and empirics are further confused as in the next page Kittilson adds that the candidate nomination the British Labour Party is controlled locally and this increases women's representation. Clearly the variables "party centralization" and "level of candidate nomination" have a different meaning for Kittilson, but their definition is indistinguishable for the reader (e.g. see Kittilson, 2006, 120-121)

The coding becomes even more cumbersome when considering organizational characteristics. The amount of effort one would have to put in to code these variables is disproportionately large to the potentially marginal payoff of including them in a cross-national study.

2.3. Culture

In the field of women's descriptive representation "culture" mainly refers to countries' dominant gender roles and attitudes towards gender equality. The prevalence of traditional attitudes towards gender equality and roles can hinder female political representation by making women reluctant to come forward as candidates. Also, when the majority of the electorate hold the public/political domain as belonging to men, female candidates may fail to attract enough votes, even if they do run. Thus, culture affects both the supply and demand of female candidates – traditional values decrease women's chances of getting elected as well as deter women from running for office in the first place.

Because of this dual effect, culture holds special significance for many researchers (e.g. Hill, 1981; Norris and Inglehart, 2001; Inglehart and Norris, 2003; Paxton and Kunovich, 2003). Paxton and Kunovich (2003) for example contrast culture to socioeconomic conditions which in their opinion only affect supply (the pool of eligibles) and electoral systems, which impact demand.³ This dissertation argues that the special significance of culture does not stem from how it effects both supply and demand, but how it influences and mediates the effect of other variables.

Gender roles and attitudes clearly should and do affect women's employment and education levels (e.g. Clark, Ramsbey and Adler, 1991). Indeed, some authors have measured the effect of culture by using socioeconomic controls such as female employment, educational achievement and prevalence among professional occupations (Hill, 1981; Matland, 1998). Culture also interacts with institutions. For example, Valdini (2012) argues that personal vote incentives effect women's candidacy negatively only in countries where more voters hold traditional values. How women's participation in politics is perceived should also have an effect on quota adoption, especially on the adoption of voluntary party quotas.

This dissertation argues that culture is an intervening structure that can hinder or support the effect electoral systems have on women's representation. The impact of large district magnitudes can only have its fullest effect under fairly permissive cultural conditions. In traditional societies parties may be unwilling to nominate women even

³Many authors would, of course, disagree with that. For example, Stockemer and Byrne (2011) argue that female employment affects demand just as well as supply and Valdini (2012) states that personal vote incentives decrease the supply of (not demand for) female candidates.

to the lower positions on the list. This kind of attention to the variation in the effect of district magnitudes has so far been minimal.⁴ The relationship between culture and district magnitudes is discussed and tested in the second paper, along with the conditional effects of institutions.

Despite its potentially unique and significant impact, measuring the effect of culture has, for the most part, eluded researchers. Quantitative studies of women's representation often use dummy variables indicating dominant religion (e.g. protestant, orthodox, catholic) or region as proxies of culture. The most common hypothesis is that protestant countries exhibit higher and catholic and orthodox societies lower levels of women in the legislature. The empirical evidence is mixed – e.g. Reynolds (1999); Siaroff (2000) find no effect of religion, but Paxton (1997); Viterna, Fallon and Beckfield (2008) do. Religion and region are, of course, also problematic as they do not vary over time, something that we would expect gender attitudes to do.

A handful of studies have used survey results, particularly the World Values Survey (WVS), as an indicator of culture (Inglehart and Norris, 2003; Paxton and Kunovich, 2003; Tripp and Kang, 2008). These works uniformly report a significant positive relationship between egalitarian attitudes and women's representation. While surveys are useful in measuring culture, their use in quantitative time-series cross-section (TSCS) analysis is limited by the inconsistency of survey questions that vary both between countries and over time. The published work using surveys has only analyzed cross-sectional data. This will also be the approach in the second paper of this dissertation, where I test the interacting effects of electoral systems and culture. The thesis, however, does not have a cure to the problem of measuring culture in TSCS analysis. Instead, in the following chapter I will argue that culture can be left out of the equation in some TSCS analysis.

2.4. Political ambition

The three strands of theory described above are related in that they focus largely on limitations imposed on women's to gain representation (i.e. on discriminatory conditions). The assumption is that women are as interested in running for political office as men, and removing any barriers, we would reach parity. However, in the last few years new research has emerged that argues that women and men also differ in political ambition – women among the pool of eligible are less likely than their male counterparts to ever consider running for office (Fox and Lawless, 2004, 2005, 2010; Fulton et al., 2006). A breakthrough survey in this area is the two waves of Citizen Political

⁴But see for example Matland and Brown (1992), who argued that large district magnitudes might actually improve women's electoral chances under "traditionalist culture". They did not find any support to this studying the state legislative elections of North Carolina.

Ambition Study conducted in the United States by Fox and Lawless (Fox and Lawless, 2004, 2010).

While the evidence from the ambition study suggests that women are less politically ambitious, Fox and Lawless (Fox and Lawless, 2004, 2005, 2011) also emphasize that women are also less likely to lack the ingredients that foster ambition. First, compared to men women are much less likely to self-assess themselves as qualified. Women never consider running as they believe themselves not to be qualified for office. Secondly, women are also less likely to receive encouragement to run for office – again, encouragement from party or community leaders is an important factor that increases political ambition. Thirdly, compared to White men, women and minorities have also received less encouragement as children from their parents to ever take up political office. Thus, the underrepresented social groups are not politically socialized in the same manner as majority men.

Other scholars (Fulton et al., 2006) have found that political ambition at a later stage, e.g. moving from a state legislator to a federal office, is also affected by family obligations. Women with children in the household are nearly half as ambitious as men with children at home. At the same time, when there are no children present, there are no gender differences in the state legislators' ambition to run for federal office.

So, while these studies show that women do not have the same level of political ambition, they also clearly point that this gender ambition gap is largely due to traditional gender roles and socialization. Women have lower level of confidence in their abilities and weed themselves out by never considering candidacy at all because they have not been taught to be confident, self-promoting and assertive (Fox and Lawless, 2011). Importantly, this socialization has already started in early childhood, when parents are more likely to encourage boys to run for office one day (Fox and Lawless, 2005). Gender roles also affect how party elite treats potential male and female candidates – women receive less encouragement to seek office and they are also less likely to be approached and recruited by political actors (Fox and Lawless, 2010).

In conclusion, to a large extent political ambition boils down to culture and social status – women's socioeconomic position does not only create structural barriers for seeking office, but works also in more subtle ways. Centuries of socioeconomic inequality and gendered socialization hold back the ambition of women in high-profile professions – these women simply do not have the same confidence in themselves as men. Similarly, it also holds back the recruiters to encourage and approach potential female office seekers. Thus, while the lack of ambition can explain the dearth of female office seekers, this gender gap in ambition itself is caused by cultural and socioeconomic conditions.

2.5. Other hypothesis and controls

So far the dissertation has reviewed the three major theoretical approaches that most researchers agree on as significant predictors of women's parliamentary representation. This section discusses a number of other theories and hypothesis that have also been advanced, but have not found general acceptance. Most of these will be dealt with only in this section.

The work on the effect of legislative turnover and degrees of democracy are perhaps the largest among the less researched causes of women's representation. It has been argued that high legislative turnover should increase female legislative seat shares because it reduces the advantage of incumbents, who are dominantly male. As fewer incumbents get reelected, more new female candidates have a chance to win a seat (Darcy, Welch and Clark, 1994; Schwindt-Bayer, 2005). The evidence is mostly linked to the single member districts, particularly the United States (Darcy, Welch and Clark, 1994). Schwindt-Bayer (2005) is the only one to argue that the mechanism also holds cross-nationally. She also adds that term limits have a positive effect on women's representation.

This dissertation returns to the potential effect of turnover in the third paper and argues that the positive effect of turnover is not universal, but conditional on party preferences. When conservative parties win from high turnover women's representation can remain unchanged. More generally, I argue that the mechanism is difficult to capture in macro-level research because it works at the party and not the national level.

Because many studies include non-democracies in their analysis, the level of democracy has often been included in the models. The level of democracy has been linked to women's representation through both normative and procedural aspects (Stockemer, 2009). In normative terms, a democratic system should guarantee the representation of all major social groups, including the descriptive representation of women. Procedurally, a democratic systems allows the articulation and organization of various interests and multiple channels to gain power and information. Thus women have more chances of campaigning for their interests. But while many authors hypothesize a positive effect, their multivariate analysis does not confirm this (Stockemer, 2009; Hughes, 2009; Paxton, 1997; Kunovich and Paxton, 2005). Indeed, the empirical evidence often leads the authors to conclude that "democracy can inhibit advancements in the parliamentary representation of women" (Stockemer, 2009).⁵

⁵Some have also suggested that the effect of democracy is curvilinear, strongest at the extremes of full democracy and no democracy (Viterna, Fallon and Beckfield, 2008).

This thesis does not study the effect of democracy or democratization on women's representation. First, the papers here are all only concerned with democratic election, making the variation on this measure minimal. Secondly, while democracy and democratization may and, in some cases, should effect other variables that predict women's representation, it is questionable whether they have an *independent* effect. For example, it is quite reasonable to believe that electoral institutions have a different effect on women's representation depending on whether the elections are free and fair. However, to argue that democratization *per se* reduced women's representation in Eastern Europe is questionable. Democracy or democratization does not affect women's representation, it's the other processes of social, economic and institutional change accompanying them that affect representation.

A number of further variables sometimes used to predict women's representation include measures of women's groups and international women's movement, the size of the legislature, monarchy and presidentialism. Some of these works have serious methodological flaws and the hypotheses have thus been ignored by other authors. For example, McDonagh (2002) argues that monarchies open to women increase women's representation because historically they would have provided women with potential access to politics and are an example of a "gender-integrated" politics. However, most presidencies are also open to women, and should thus have the same effect on representation. She also does not distinguish whether a monarchy has ever had a female monarch and codes all Commonwealth nations as monarchies open to women. The results are further problematic as some conclusions are made based on a model estimating 23 coefficients while using a data set of 36 nations.

In other works by various authors the size of the legislature has been, up until recently, frequently controlled for. This variable was initially tested also here (both logged and not), but since it had no effect on women's representation nor on the coefficients on the independent variables, it was dropped.

This mushrooming in *ad hoc* hypothesis and the addition of new controls in the past 10-20 years has been relatively easy and inexpensive for researchers due to the increasing availability of data and statistical software. However, it has not always resulted in improved research. This is why some scholars, such as Wängnerud (2009), criticizes the field for focusing on one factor at a time (while controlling for many others) and not scrutinizing the interplay between the many theoretically relevant predictors. She has predicted "the challenge for future research to be the building of fine-tuned models that specify relationships" (Wängnerud, 2009).

This dissertation hopes to achieve just that – providing finer models that represent theory more accurately. Therefore, in the empirical testing of theories I have chosen parsimony in the number of variables in order to improve the fit between the theoretical

TABLE 1. Summary of main variables and theories

Socioeconomic approach			Institutions			Culture		
Development	+	?	PR systems	+	+	Egalitarian attitudes	+	+
Female employment	+	+/?	High district magnitudes	+	+	Protestant religion	+	?
Welfare state spending	+	+/?	Strong personal vote incentives	-	+/?			
			Closed lists	+	?			
			Quotas (Party/Legal)	+	+			
			Left ideology	+	?			

Note: The signs following the variables denote the hypothesized direction of the relationship and the robustness of empirical evidence. The first sign refers to the relationship: “+” positive, “-” negative. The second describe the evidence: “+” strong, “?” questionable, “+/?” mostly strong, but inconclusive or infrequently tested.

and the empirical model. This better fit cannot be achieved by entering a large number of variables into a model simultaneously, but by carefully considering the importance of each variable, both independently and in unison with other predictors. The dissertation also makes a major departure from previous research by modeling women’s representation dynamically. The importance of dynamic specification will be discussed in the next chapter.

2.6. Conclusions: The main theories in a nutshell

This chapter has reviewed three core theories and a number of other hypothesis that explain women’s political representation. I have argued that the main theories are very useful in understanding women’s representation, but also that they are somewhat disconnected – many of the individual factors interact with each other to affect women’s representation. Table 1 summarizes the central theories and shows the expected direction of the effect and the robustness of findings.

The socioeconomic approach has mainly utilized the three variables of development, female employment and welfare spending, which all are expected to increase representation. The findings of this strand of literature are, however, the most inconclusive. This should not be taken necessarily as evidence for rejecting the whole approach, but rather as a sign that more work remains to be done to better understand the relationship between representation and women’s socioeconomic condition. This will be the goal in the first paper of this dissertation.

In general the findings on institutions, especially on electoral systems and quotas, are much more robust – proportional systems, large district magnitudes and quotas increase women’s representation and there is little evidence to the contrary. More questionable are the findings on strong personal vote incentives, closed lists and left ideology. I will argue in the second paper of this dissertation that the inconclusive results may be caused by gaps in theory, namely researchers have not yet taken account how the effect of institutions is conditional on other institutions and also culture. Secondly, the third paper will also show that voters do not generally discriminate against female

candidates in open lists and that the positive effect of closed lists can be conditional on party leadership attitudes. Using individual level data I show that women are disadvantaged compared to men in getting a top position on a closed party list.

The findings of cultural approach depend mostly on how culture is or can be measured. The studies that use cross-sectional data and a smaller number of countries can avail of survey data and use measures of egalitarian attitudes (e.g. agreement with “do men make better leaders”). These studies uniformly find that the more egalitarian the values, the more female representatives. When researchers use religion (or region) as an indicator of culture the results are much more inconclusive. This research touches the issue of culture in the second paper where it is argued that public attitudes can enhance and hinder the effect of electoral institutions on women’s descriptive representation.

CHAPTER 3

Data, measures and methods

This chapter briefly discusses the theoretical and technical issues regarding case selection, the measurement of variables and methodological choices for panel data. In here I will focus mostly on discussing the case selection for the macro chapters. Only the most important measurement and methodological issues will be discussed below and a full description of all variables and modeling considerations are provided in the appendices.

3.1. Case selection

The dissertation uses two different sets of data – candidate level data from Estonia and cross-national macro data from democratic elections. The candidate level data covers six parliamentary elections held in Estonia between the years 1992 to 2011 and is obtained from the Estonian National Electoral Committee.¹ The data was received in a number of separate files and in a format that required restructuring and coding before it could be used for analysis.

The Estonian case is insightful because of the unique electoral system that combines both closed and open lists. This allows us to compare women's electoral fortunes in both lists at the same election, that is, in a situation where all contextual factors are controlled for. It is also no less important that the data covers nearly all candidates over six elections (20 years). Most other similar research only cover one or in some cases 2-3 elections.

Because of the uniqueness of this candidate data and the general acceptance of single country quantitative case studies in the field of women's representation, I will not further elaborate on the selection of Estonia here. The justification for case selection of the macro data may, however, warrant some more explanation.

Macro level studies on women's representation are widespread and vary much in the type of data used. The earlier studies were cross-sectional and covered only developed established democracies. Later the data pool has been expanded to a more diverse range of countries. Here the women's descriptive representation literatures in sociology and political science diverge – while the former has extended the case selection to

¹I would like to thank Priit Vinkel from the Estonian National Electoral Committee for his help in obtaining the data and Riho Kangur for his advice on some matters of coding.

non-democracies, the latter has restricted itself to democracies (both the older and newer). This dissertation follows the tradition in political science and covers only democratic elections. The decision to only include democracies rests on the belief that the routes to office are considerably different in the two regimes. The effect of electoral institutions, and probably also other factors, is considerably different in democracies and non-democracies.

I used Freedom House scores to determine whether the elections could be included in the data set. Elections were included when Freedom House coded that year as “free” – the average score of political rights and civil liberties is below 3, when 1 is the score for the most free societies. It may be argued that other categorizations (e.g. polity scores) could also be used for determining the suitability of elections. But for most countries in the data set the source used has no effect on categorization. The classification of some unstable democracies may be more debatable and if other sources characterized these elections as fraudulent they were excluded from the data set.²

Regardless of only looking at democratic states and elections, the 75 countries included here are remarkably diverse. The data set includes the wealthy stable democracies, but also the low income countries of Africa, countries of vast socioeconomic inequality and those with communist past. But just as there are virtues to diversity, there are also vices. Namely, it has been argued that researchers should pursue different theories to explain female representation for the developed and less developed countries (Viterna, Fallon and Beckfield, 2008). Some have pursued this strategy and built models to explain representation in less developed nations (Ross, 2008; Hughes, 2009; Swiss, 2009). It is more common to introduce completely new hypotheses of political representation rather than amend existing theory and models to suit the less developed nations.

Here, the focus is on the latter, that is on improving current theory and models to suit both the developed and less developed democracies (e.g. as in modeling the effect of female employment). I argue that the more important dividing line is not development but regime type. The papers that have attempted to develop theories for the developing countries simultaneously mix democratic and non-democratic regimes. So, while these authors argue that the older models developed on the wealthy stable democracies do not work on less developed countries, it may in fact be that the models do not work for non-democracies. For example, it makes sense that electoral systems do not have a strong or a significant effect in less democratic, not in less developed countries. While the level of democracy is usually controlled for in these models, this, without interaction terms, does not account for the different effects electoral institutions may have on women’s representation in different regimes. In short, we should not necessarily pursue different models for different development levels, but for different levels of democracy. Some

²The sources used were Lindberg (2006) and Nohlen (2005a,b). An excluded case based on these was, for example, the 1974 election in El Salvador.

support of this is evident in the paper by Yoon (2004), who finds many conventional theories to hold among African *democracies*.

As has become common in the field, the dissertation also uses time-series cross-section (TSCS) data. The challenges of modeling TSCS data will be discussed below and in the methodological appendix. The data set was compiled for this dissertation based on a number of previously published data sets (e.g. Salmond (2006)). Because most previous work has been on Western established democracies the data set had to be extended to new and less stable democracies in Eastern Europe, Latin America, Asia and Africa. Most of the variables were coded using the data bases of international organizations (e.g. ILO, OECD, IPU). For some variables, e.g. party quotas, the dissertation had to develop new coding schemas.

The data are unbalanced as some countries hold elections more frequently and/or have had a longer democratic experience. The time horizon of this study is limited to 1980-2010 because some socioeconomic data was not available for elections held before 1980. The first of the macro level papers presented only covers the 33 OECD countries. The countries are limited to OECD due to data availability – the different measures of welfare spending and income inequality were not available for other countries. Countries with a population smaller than 250 000 were excluded for data availability considerations. A full list of countries and elections is included in the appendix (page 129).

3.2. Some issues of measurement

This section discusses the measurement of some of the variables used in the macro level study. A complete list of all variables and their sources is provided in the appendix (page 131).

Electoral systems. Earlier studies of women's representation used a dichotomous or sometimes a trichotomous variable to distinguish between plurality/majority SMD systems from proportional and mixed systems. The general assumption was that what matters most for the representation of women is the distinction between PR and SMD systems. Later studies however showed that women's representation can vary significantly even within PR systems (Rule, 1987; Matland, 1993). For example, Engstrom (1987) shows that in Ireland even the difference between districts of 3, 4 and 5 seats can have substantial impact on the number of female contestants and representatives. Thus today, nearly all work on women's representation use district magnitudes to distinguish between systems where the average magnitude is low (e.g. around 3 or 5) from those with high magnitudes (e.g. 8 or above). The variable is often also often logged, to allow greater distinction between systems with low magnitudes, where every increase in the number of district seats should have a larger impact on representation (e.g. see Salmond, 2006).

Various methods can be used for coding district magnitudes. A common approach is to use the mean (for simple systems) and the weighted mean for mixed systems. This is also the method used in this dissertation. A second approach would be to use the mean for all systems and the third approach is to use the median rather than the mean. Collecting data on the median DM is the most difficult, as it requires knowing the size of all districts, which is usually not available.

For countries using a fixed district magnitude (e.g. SMD, or one national district as in the Netherlands) all measures give the same result. For PR systems with varying number of districts the results are highly similar for all methods, especially when the log of district magnitudes is used in the models. The methods give different results for mixed systems. The median DM does not distinguish between mixed and SMD systems. Mixed systems usually have a large number of SMD district and a single (or a smaller number) of large districts. Because of the large number of SMD district the median will be one, just like in a pure SMD. From the point of view of women's representation, however, the two systems should not be measure as same.

The weighted mean method may produce very large magnitudes, making mixed systems look overly proportional. For example, Lithuania has 71 single member districts and one 70-member district (141 seats in total). The weighted mean is $1 \times \frac{71}{141} + 70 \times \frac{70}{141} = 35.25$. The simple mean district magnitude for Lithuania would, however, be $\frac{141}{71+1} = 1.94$. The difference between the two is quite significant. This dissertation uses the weighted mean because it best distinguishes the mixed systems from the SMD.

For dependent multi tier system (e.g. Austria, Estonia) the district magnitude reflects the mean magnitude at the first tier. When countries had one or few special single member districts (e.g. Finland, Spain, Slovakia) they were considered as regular PR systems and the mean DM was used. The data comes from various sources, such as Clark and Golder (2006); Salmond (2006). Most recent magnitudes were calculated by the author, using the IPU data base, other resources on election rules or national data bases (see page 151 for an extensive list).

Legal Quotas. Devising a proper indicator for legal quotas has also been an issue of some discussion in the literature. The earlier studies used dummy variables for absence or presence of affirmative action measures, but given the diversity of quotas this is clearly inadequate. To remedy this Schwindt-Bayer (2009) suggests measuring legal quotas based on three dimensions – quota size, enforcement and placement rules. Quota size is a percent measure that refers to the minimum share of candidates required to be female – e.g. a 30% quota. The enforcement rules are measured categorically and capture whether there are any consequences for parties that do not abide by quota laws. While Schwindt-Bayer has used three categories (strong, weak and no enforcement), this dissertation uses only two (enforcement and no enforcement, the “weak” category

TABLE 1. Coding legal quotas, Argentina and Belgium

<i>Argentina</i>							
Election year	1991	1993	1995	1997	1999	2001	2003
Rules:							
Enforcement	No Quota	No	No	No	No	Yes	Yes
Placement	No Quota	No	No	No	No	Yes	Yes
Size (%)	No Quota	30	30	30	30	30	30
As in data set:							
Weak Quota	0	30	30	30	30	0	0
Strict Quota	0	0	0	0	0	30	30

<i>Belgium</i>					
Election year	1995	1999	2003	2007	2010
Rules:					
Enforcement	No Quota	Yes	Yes	Yes	Yes
Placement	No Quota	No	No	Yes	Yes
Size (%)	No Quota	25	30	50	50
As in data set:					
Weak Quota	0	25	30	0	0
Strict Quota	0	0	0	50	50

was collapsed with the “no enforcement”). Placement mandates are rules that govern in which list positions should women be placed on party lists. For example, a “zipper system” requires that men and women alternate on party lists. Here, Schwindt-Bayer used a binary variable, as will be the case in this dissertation.

In her empirical analysis Schwindt-Bayer enters all three indicators to the models separately and also adds four interaction terms (size $\times$ enforcement, size $\times$ placement, placement $\times$ enforcement, size $\times$ enforcement $\times$ placement), totaling seven estimated coefficients in all.³ While this approach distinguishes nearly all possible combinations of quota rules, it is very cumbersome to interpret and also causes complications when we wish to interact quotas with other aspects of electoral systems, as will be done later in Chapter 5. Here I follow a simpler method and use two measures of legal quotas in the empirical analysis.

I first code “weak legal quotas”, that is quota laws that do not have either enforcement or placement rules. A 30% legal quota with no enforcement and placement mechanisms is coded 30. Table 1 shows two examples of this. Between 1993 and 1999 Argentina had legal gender quotas that required 30% of all candidates to be female. During that period there were no rules regarding the placement of candidates nor any enforcement rules. Thus for the elections of 1993-1999 the variable “weak legal quota” is coded as 30. Belgium adopted 25% legal quotas before the 1999 elections. The laws included enforcement rules, but no placement mandates. Because there were no placement mandates the variable “weak legal quota” is coded according to the quota size.

³She enters the three category “enforcement” as numeric rather than a categorical variable. Had she entered this as a categorical variable the total number of coefficients needed to estimate would be even higher.

I then also code “strict legal quotas” as those cases where both enforcement and placement rules are present – a 30% quota is coded 30 only when both rules are present and if either is absent it is coded as zero. For example, by 2007 Belgium had added placement mechanisms to the quota laws and thus now the variable “strict legal quota” is coded according to the quota size. The weak legal quota is now coded as zero. Argentina adopted enforcement and placement rules before 2001 and since that election the variable “strict legal quota” is coded 30 and the “weak legal quota” as “0”.⁴

This coding is much simpler, but still accounts for the variation in the size and enforcement/placement rules. The two measures can also be justified based on the empirical findings of Schwindt-Bayer (2009), which show that the major difference is between quotas that either have both enforcement and placement rules, or neither of these. She also argues that both types (with and without enforcement and placement) can significantly increase women’s representation, but the size of the effect is much larger for quotas with placement and enforcement rules.

Party Quotas. Measuring voluntary party quotas is more complicated and so far few efforts have been made to capture those in macro level studies. The difficulty arises because party quotas are often only used by some parties in the system. Thus the positive effect these may have on women’s representation is restricted to only a fraction of seats. Depending on the size of the delegation of quota using parties, this fraction can be quite large or small. It is most common to capture party quotas as a categorical variable. For example, Tripp and Kang (2008) have used a dummy variable indicating party quotas where either the largest or second largest party in the parliament use voluntary party quotas. While this excludes minor parties that have little effect on election results (e.g. many Green parties across Europe), it still does not capture the variation in the size of the major parties nor the size of the quotas. For example, the British Labour Party, the second largest party in the UK in 2010, received nearly 40% of the seats, but the Swiss Socialist Party (SPS/PSS), who were second in 2007 elections, only held 21.4% of seats. In fractionalized systems even the major parties may hold only a small share of the total seats. In addition to the variation in the size of the parties using quotas, the size of quotas themselves varies also. Party quotas have mostly between 30-50%, but in 1980’s it was also common to have quotas of only 25%.

To reach some uniformity across countries, I have coded party quotas for elections where the percent of seats held by parties using quotas approximates at least 40%. I chose 40% as the cut-off to include a wider number of elections among the party quota using cases. The variable is then coded as the average party quota size across all parliamentary parties using the quota. Table 2 shows two examples of how the party

⁴Mixed categories of legal quotas, such as those with only enforcement or only placement rules were difficult to code because there is a small number of such cases.

TABLE 2. Coding party quotas, South Africa and Denmark

<i>South Africa</i>						
Election year	1994	1999	2004	2009		
Party quota usage among parliamentary parties:						
Percent of seats	63	66.5	69.8	66		
Number of parties	1	1	1	1		
Average size (%)	30	30	30	30		
As in data set:						
Party Quota	30	30	30	30		
<i>Denmark</i>						
Election year	1977	...	1984	1987	...	1998
Party quota usage among parliamentary parties:						
Percent of seats	4	4-11.7	43	45.3	43-45	No Quotas
Number of parties	1	1	2	2	2	No Quotas
Average size (%)	40	40	40	40	40	No Quotas
As in data set:						
Party Quota	0	0	40	40	40	0

quotas were coded. In South Africa the African National Congress (ANC) adopted a 30% quota in 1994 and have continued to use it. It is the only party using gender quotas, but because it has consistently held over 60% of the seats, the variable “party quota” is coded as 30 for all elections. In Denmark the Socialist People’s Party adopted 40% gender quotas in 1977, but because the party only held 4-12% of seats between 1977-1981, party quotas are coded “0” during that period. In 1983 the Social Democratic Party also started using a 40% quota and together the two parties received over 40% of the seats in 1984. The party quota size was then coded as “40”. A third party, The Left Socialist Party, used a 50% quota during the elections of 1987 and 1988, but did not win any seats. For this reason the average quota size remains at 40% for those elections. All Danish parties abandoned quotas before the 1998 election and thus the party quota size is zero for this and the consecutive elections.

This method of coding ensures that both the size and the proportion of seats held by quota using parties is reflected. All countries and elections where minor parties or only one of many large parties use quotas are coded as having no (zero) party quotas (e.g. Switzerland, Czech Republic, Croatia, Cyprus). The measure is imperfect, as it lumps together cases where 40% of seats are held by parties using quotas with countries where nearly all parties use voluntary quotas. However, the measure is still an improvement over a dummy variable and reflects a reasonable compromise between feasibility and accuracy.

Culture. While scholars may struggle to find the best way to code electoral systems, quotas or women’s socioeconomic standing, the issues are not nearly as difficult as the question of how to measure culture. The traditional proxies such as region and religion are unsuitable as they do not vary over time, but public attitudes towards women’s roles may go through significant transformations in 10-20 years. Small- and medium-*N* work may limit itself to a region or a group of countries that could be thought of as

homogenous with regard to culture, thus an actual measure is not necessary to control for gender roles and attitudes. In a large cross national studies with a time series, none of the above are a suitable option.

The difficulty of capturing the effect of culture has led some to propose methods of control for culture without directly measuring it.⁵ While these approaches cannot detect the effect culture itself has on women's representation, they can be effective in helping to determine the effect of other variables. If a crude measure (such as religion) is ineffective in capturing culture too much variation may be left to explain for other variables, overestimating their importance in predicting women's representation.

One such method is to use country random or fixed effects to control for unmeasured country-specific variation. The two are often recommended and used with TSCS data, including in the field of women's descriptive representation. Both methods allow for more flexibility than regional or religion dummies, but are, unfortunately, theoretically uninteresting. Also, just like the dummies for region, fixed and random effects still cannot account for the temporal variation in culture.

Salmond (2006) has proposed a method that, to an extent, accounts for the time-varying aspect of culture. His approach was to overcontrol for culture in one model and undercontrol for it in another model, thus leading to the lower and upper bounds of the estimated effects of other variables. In the overcontrol model he includes the lag of the dependent variable, years since suffrage and the year of election to capture culture. All of these vary across years and add the necessary time-specific variation to culture.

But an even simpler approach would be to just include the lagged women's representation. Including the lag of the dependent variable can account for the time-varying omitted variables (e.g. see Angrist and Pischke, 2009, 243-244). I also take advantage of the idea that culture affects women's employment, thus the effect of culture is also partially accounted for by including employment. But there are other important reasons for the inclusion of the lagged dependent variable. This will be the focus of the next section.

3.3. Methodological choices: Dynamic models

I have used dynamic models to predict women's political representation in the macro level chapters. Dynamic models allow researchers to account for situations where some variables have an impact that is distributed over time (Beck and Katz, 2011). In other words, the explanatory variables x effect y at the current period and also in the next periods. In contrast, in stationary models the effect of the covariates is felt

⁵All the techniques reviewed below are only applicable for TSCS data and not for cross-sectional models.

immediately and completely – x will effect y only at the current time period. An example of a dynamic model is the lagged dependent variable model (LDV), but there are also a number of other specifications. The often used AR(1) errors correction model is an example of a static model. Modeling the same process using a dynamic and a stationary specification can provide very different results and substantive conclusions. The model estimates diverge the most when the dynamics of the process are slow – i.e. the dependent variable takes a long time to respond to changes in the explanatory variables.

While in many other fields of political science the use of dynamic models has increased, this has not been the case in research on women's political representation. Of all the works reviewed here only three studies have used a dynamic specification (the LDV model in all three cases). Iversen and Rosenbluth (2008) use the lag in one of the models and have been the only ones to calculate the long-run multiplier of an explanatory variable. They, however, dismiss the LDV model, arguing that the lagged female representation captures too much variation in the dependent variable. The other two papers by Salmond (2006) and Rosenbluth, Salmond and Thies (2006) include the lag of female representation in the models, but do not interpret the long-run effects.⁶ Many authors prefer not to use the LDV because they claim that it artificially depresses the effect of other substantively interesting variables (e.g. Salmond, 2006) and that the lag is atheoretical (Schwindt-Bayer, 2005).

This dissertation argues that a dynamic specification is theoretically more appropriate for the analysis of women's representation. For example, while we would expect the increase in female employment to affect women's parliamentary seat shares, the total effect is most likely not immediate. Indeed, we would expect it to take some years for the improved social status of women to translate into political representation. The same should apply for quotas and changes in other institutions. While some of the effect should be felt immediately, the full effect may only appear in the long-run (e.g. parties and voters take time to respond). The dynamics may even be quite slow, meaning that most of the effect would take a long time to occur.⁷ Using dynamic models makes a major contribution to the literature on women's representation because this way we can study how the covariates increase or decrease representation over multiple elections.

Before deciding on any specific dynamic specification I have estimated numerous alternative specifications and compared them based on F -tests. Further details about choosing between dynamic models is provided in the methodological appendix (page 135).

⁶Both papers also transform the dependent variable (log-odds), but not the lag. This affects both the estimation and the interpretation of the model.

⁷A second theoretical reason for including the lagged female representation is the effect of incumbency. The lagged percent of female MPs reflects the percent of potential female incumbents that could run for reelection.

The appendix also discusses numerous other issues related to TSCS data. The topics covered include stationarity, heteroscedasticity, contemporaneous correlation and unit heterogeneity.

CHAPTER 4

Women in parliaments and inequalities of class and gender

ABSTRACT. Wealth, welfare and women's employment have often been seen as important determinants of women's numeric representation in parliaments. While the hypotheses related to these variables are reasonable, there are problems with fitting them with a larger body of work on representation and gender equality. First, I argue that the work on welfare states and representation is affected by endogeneity – female legislators are also more likely to support welfare state expansion. Secondly, when wealth is distributed unequally, a large group of women will not benefit from the positive effects of development and employment. Thus, increase in income inequalities can also decrease women's representation.

4.1. Introduction

Explaining women's descriptive representation, i.e. the percent of female members of parliament, has been the focus of a large body of research for decades. Among the different theories are the studies that claim development and women's socioeconomic conditions (e.g. levels of education and employment) to have a major impact on the proportion of seats held by female legislators. It is argued that employment is most effective in increasing political representation in the developed nations where women are more likely to hold high-skilled jobs. More recently, socioeconomic approaches have also been extended to include the effect of welfare state spending, a factor that can further improve women's economic and social status in the society.

The new measures and theories proposed also introduce a new set of problems and questions that remain unanswered. This paper looks at two interrelated problems with the current scholarship on socioeconomic conditions and women's representation. First, I show that extending the theory to welfare state spending produces a problem of endogeneity. Studies on the effect of gender on legislative output, has found evidence that female representatives are more supportive of welfare expansion than men. Thus, while those working on descriptive representation argue that welfare state expansion increase women's representation, scholars interested in substantive representation contend that women's representation increase welfare spending.

Secondly, I make the point that development and female employment rates are not always good indicators of women's socioeconomic position, even in the developed nations. The benefits wealth and employment have on gender equality, and thereby on women's political representation, are enjoyed primarily by the women of the higher social status. Women's political representation should be increased in countries where development and female employment go hand in hand with a more equal distribution of wealth among women and across the whole population.

The paper is organized as follows. In the next two sections I outline the previous literature and the two problems with socioeconomic explanations in detail. Both of these problems are then analyzed empirically using data from the OECD nations. I use structural equation modeling to empirically explore the problem of causality between welfare states and representation. The results show that endogeneity is, in this case, a serious issue and direct measures of welfare state spending should be excluded from models of women's political representation. The paper then tests the effect of income distribution on women's political representation and finds that there are fewer female legislators when wealth is distributed unequally.

4.2. Current perspectives on development, work and representation

The literature on women's descriptive representation has identified many explanatory variables that increase female legislative seat shares. Most notably researchers have devoted attention to institutions, such as electoral systems (Rule, 1987; Salmond, 2006; Thames and Williams, 2010), quotas (Krook, Lovenduski and Squires, 2009; Krook, 2009; Schwindt-Bayer, 2009), parties (Kittilson, 2006; Kunovich and Paxton, 2005), but also to culture and ideology (Inglehart and Norris, 2003; Paxton and Kunovich, 2003). This paper is interested in a third set of variables identified as significant – the socioeconomic conditions, such as general levels of development, women's level of (secondary or tertiary) education and employment.

Women's economic power and parity with men have frequently been seen as precursors for female political representation (Oakes and Almquist, 1993; Iversen and Rosenbluth, 2008; Kunovich and Paxton, 2005; Stockemer and Byrne, 2011). The mechanisms by which development and employment affect representation can be both indirect and work more at the macro level, and direct individual level. With the former, macro level approach, I refer to the arguments whereby development, modernization and female participation in the labor force spur on social change – cultural norms become more egalitarian, fertility rates will drop and women become more active participants in the public sphere (Moore and Shackman, 1996; Matland, 1998). The process of social change will affect both how voters evaluate female politicians and how women themselves see their role in the society, increasing both the demand for and the supply

of female candidates for political office (Stockemer and Byrne, 2011). In a nutshell, development and female employment have an indirect effect on women's political representation by fundamentally reshaping the society and the position of women in it.

We can view the direct, individual level approaches as those that put more emphasis on the immediate and tangible implications of employment (e.g. skill development and financial resources). Money and skills are necessary to launch a successful campaign and voters evaluate candidates' ability based on previous professional achievements. Because resources conducive to political participation are accumulated only in certain types of jobs (Schlozman, Burns and Verba, 1999), the pool of eligible candidates for office is often limited to certain prestigious professions, such as lawyers in the United States and long careers in party offices and local councils in Europe. As the presence of women among the pool of eligibles (i.e. in the high-skill/high-level employment) increases, so should women's political participation and the number of female legislators (Darcy, Welch and Clark, 1994; Oakes and Almquist, 1993; Kenworthy and Malami, 1999).

No less important is the time available for political participation, which women are much less likely to find due to their dual burden at home and at work (Goetz, 1998). Again, this is often related to wealth and employment status. People in wealthy nations have more time and those employed in skilled professions do also.

While both the national and individual level explanations are reasonable, the empirical findings on the relationship between female development, employment and representation are mixed, with some authors finding a substantial effect, and others not. The review by Stockemer and Byrne (2011) reveals that some of the disagreement in findings may be the result of using different measures, different groups of countries and/or study years. Two main avenues of theoretical development have also been pursued to make sense of the conflicting evidence.

First, scholars have argued that the type of employment taken up by women can be quite different from country to country. In the less developed countries women are overwhelmingly employed at subsistence level low-skill jobs and labor force participation cannot have the same kind of effect on neither the resources nor the social role and position of females in those nations (Kunovich and Paxton, 2005; Matland, 1998). Thus, employment should be related to political representation only in the developed nations, where women take up more professional employment. Empirically, this argument has validity – the correlation between employment and representation among the developed nations is high (Pearson's $r = 0.70$), where as it appears absent among the less developed democracies ($r = -0.03$).

Secondly, researchers have argued that welfare states interfere with other socioeconomic predictors and can also effect women's representation. Thus, welfare spending

(Thames and Williams, 2010; Rosenbluth, Salmond and Thies, 2006; Rule, 1987), typology (Siaroff, 2000) or an indicator of both McDonagh (2010) is added to the model alongside female labor force participation. The exact causal mechanisms proposed are quite varied. Broad statements have been made such as welfare states (like employment and development) can empower women or improve their status in the society. This is why we find more female legislators in Scandinavia (Paxton, 1997) and why social democratic welfare regimes are associated with more female MPs (Siaroff, 2000; Krook, 2010).

Rosenbluth, Salmond and Thies (2006), however, argue that welfare states create an ideological gender gap and a pressure for parties to recruit female candidates. Scandinavian welfare states have taken over many of the care functions provided traditionally by women's unpaid labor and now employ women to fill these jobs. This gender gap in public sector employment creates an ideological gender gap, with women being more leftist and supportive of the welfare state than men. When several parties compete for women's votes they find it beneficial not to only offer policies, but also descriptive representation. By contrast, in countries where women's welfare is related to that of their husband, or where women are not employed so extensively by the public sector, this gender gap in ideology does not exist and parties do not have to cater for special demands.

Welfare states can also change the way voters view female candidates. By adopting welfare policies the state lets voters know that maternal attributes, as women are assumed to have, are located in the public domain. In turn, this leads voters to view and vote women as suitable political leaders (McDonagh, 2010). So, welfare policies are a way for the state to cultivate favorable voter attitudes towards female politicians. Rule (1987) also suggests that when welfare issues are more prominent, women become more eligible for office as they are seen to have more expertise with problems of child welfare and education. Both voters and recruiters alike become more receptive to female candidates in social welfare context.

As the review above shows, we would generally expect development and female employment to effect political representation positively either through social change or the development of women's skills and resources. In developing nations this positive effect may be reduced due to the low-skilled employment taken up by women. In developed nations a stronger welfare state may augment women's social position and resources, increasing their political representation. A thin welfare state can, however, have a negative effect on women's representation. While the above hypothesis are reasonable, there are some problems with fitting them with a larger body of work on representation and gender equality. First, the relationship between welfare states and representation suggested by the descriptive representation literature conflicts with the women's substantive representation literature which argues that the causality is reversed – female

legislators change welfare states. Secondly, descriptive representation scholars have also assumed that the benefits of socioeconomic progress will be equally enjoyed by all women, but there is research to show that gender equality is stratified. Women of higher social status are more likely to experience gender equality at home and at work. I will now turn to these issues.

4.3. Two suggestions for improvement

The field of substantive representation of women is interested in whether female legislators make a difference for women – whether female representatives vote differently from their male counterparts and support and/or initiate legislation beneficial to women. Multiple studies have shown that gender affects representatives' attitudes and/or their legislative behavior (initiation and/or sponsorship of bills) on a diverse range of issues (Celis, 2006; Lovenduski and Norris, 2003; Swers, 1998; Thomas, 1994; Vega and Firestone, 1995; Norris and Lovenduski, 1993). With respect to welfare states specifically, Wängnerud (2000*a*) shows that female MPs in Sweden are more likely to consider social welfare both as an area of professional interest and a campaign issue. In United States female state legislators have more liberal attitudes towards welfare state policies (Poggione, 2004) and in both Finland and in Estonia women are more likely than men to sponsor a bill on a social issue (Solvak, 2011).

Support for the effect of gender on MPs attitudes and behavior towards social policy issues is mostly based on single country analysis, with some research also providing comparative evidence from a small number of countries (Wängnerud, 2000*b*; Narud and Valen, 2000; Schwindt-Bayer, 2006). Large-*N* comparative research is rare, but point to similar findings. For example, Bolzendahl and Brooks (2007) study 12 advanced democracies, concluding that female legislative seat shares affect welfare spending. Kittilson's (2011) study of 24 democracies shows that shares of female party delegates and party executives contribute to the focus on social justice and (in some cases) welfare state expansion in party programs.

The literature on the substantive representation conflicts with that of descriptive representation by hypothesizing a reverse causal relationship. Disentangling the direction of causality between welfare spending and women's parliamentary representation is very difficult. The first mover in this puzzle may have been the welfare state, rather than female legislators, as welfare state development dates further back than women's gains in parliamentary representation. However, even at the phase of welfare state development, women's mobilization (though not parliamentary representation) has probably had an influence in the development of the welfare state (Huber and Stephens, 2001, 125-126). Regardless of the initial developments, today the reciprocal relationship cannot be dismissed. If there is strong evidence for endogeneity, the current path of

research that explores the effect of welfare state spending on women's representation should probably be modified, as the empirical results would be unreliable. However, I would emphasize that my point is not to suggest that welfare states do not matter for women, but rather argue that we have to think harder about *how* they matter and how to include them in empirical models.

Thus far researchers have also assumed that all women enjoy the benefits of development and employment equally, or at least nearly equally. But even within the developed nations, women of different classes lead very different lives. While we may, to an extent, assume that the macro level effect of employment and development (e.g. social change and attitudes toward gender roles) can be enjoyed by most women in a single country, the individual level benefits, such as skills and resources, can only be enjoyed by those who are employed in jobs that are high-skilled/well-paid or by those who are wealthy. For example, McDonagh (1982) has argued that women's political activism (e.g. campaign participation) is related not to being in or out of the labor market, but to the status in the labor market. She further adds that activism is also high among the women who have derived their higher social status through marriage. Upper class housewives are just as likely to be politically active as women who have achieved the same economic status being employed themselves. Thus, the roles women take up (e.g. employment or being a housewife) have different consequences on political participation depending on class.

More recently, Korpi, Ferrarini and Englund (Forthcoming) suggest that, in some countries, gender equality among the top earners has been increased at the expense of socioeconomic inequality of other women. For example, the advancement of the women of higher classes is facilitated by cheap maid services provided by lower class women who are willing to accept low-paid jobs. Thus we may see fairly high levels of female employment in the developed market oriented states, but this is not an indication of widespread gender equality. The authors also state that the situation does not hold for all countries. In social democratic regimes the carer issue has been approached in a manner that is not premised on widening class inequalities. Policies have been introduced in the last decade to promote more equal sharing of parental childcare – instead of only promoting female labor force participation, fathers are encouraged to take up more carer responsibilities.

Similarly, Esping-Andersen (2009) argues that the gender-equality revolution – the progress towards gender equality – is stratified, favoring the higher educated in the society. While the higher educated couples embrace egalitarian gender norms, the lower educated continue “doing gender”, that is women are not active in the labor market and do the bulk of unpaid work within the family (Esping-Andersen, 2009, p. 47). He also argues that the welfare state has a strong effect on the maturation of the gender-equality revolution. The revolution has gone much further in Scandinavian countries

than others because the welfare states there have adapted to the revolution more. These welfare states are more egalitarian, providing women with ways to reconcile family and working life.

The cited works make two important points. First, gender equality is not uniformly distributed among all women within a given society – women of higher class (whether defined as the better educated, the wealthy or in high status employment) are more likely than women of lower classes to experience equality with men in the work place and at home. Secondly, the difference in the gender equality between women of different social status is especially high in countries with generally high class inequalities (e.g. in market oriented welfare regimes), and lower in countries with less inequality (such as in social democratic welfare regimes).

This, of course, begs the question of what effect will the stratification of gender equality have on women's political participation and representation. I argue that because countries with larger class inequalities are more likely to also have larger gender inequalities among the lower classes, women's political representation will be reduced when the class inequalities are high. First, high income inequalities mean that a large number of women have not experienced the type of social change that development and female employment should have ushered in. Because of their class and gender their roles will be confined largely to the home and their participation in the public sphere is limited. Secondly, the large number of lower class women who are "doing gender" will deter the upper social status women from running for office. As previous studies have shown (e.g. Fox and Lawless, 2004, 2010, 2011), women's ambition to run for political office is curbed by women's lower self-assessment and the lack of encouragement from party officials and family members. It's the traditional gender roles and socialization that produce the outcomes of low self-assessment and lack of encouragement that curb ambition. Thus, high income inequalities produce high gender inequalities, reducing the number of potential female office seekers.

Table 1 provides a schematic representation of the relationship between gender and class inequalities and the effect of these on women's political representation. When the overall class inequalities in a society are low, women's socioeconomic status has little consequence on gender equalities – both upper and lower class women are likely to experience gender equality. However, women's class status has an effect on gender equality when class inequalities are high. Then women of lower class are likely to be stuck in traditional roles at home and at work. The presented approach underlines the importance of the socioeconomic conditions of the lower class women on the overall female representation. As long as this group of women still experience gender inequalities, women's representation will remain low.

TABLE 1. The intersection of gender and class and the effect on political representation

	Class inequalities		
		Low	High
Women's social status	Lower	Gender equality high	Gender equality low
	Higher	Gender equality high	Gender equality high
		↓	↓
Women's political representation		High representation	Low representation

The suggestion that the women of lower social status drive the level of female descriptive representation is different from previous research which largely focuses on the high-skilled and well-paid women, i.e. the ones most likely to become candidates for office. The proportion of women among the top professions and the pool of potential office seekers is, of course important, but as I have argued, their decision to run and success in winning legislative office will still depend on the socioeconomic position of other women. The fact that many women are still stuck in traditional gender roles will affect how women's position in the society is perceived, reducing encouragement and support for potential female candidates, but also affecting how qualified women assess their own abilities. Thus, the traditional gender stereotypes reduce the political ambition of women among the pool of eligibles and many potential female candidates never consider running for office.

I emphasize that the above theory about the intersection of class and gender is proposed for (and later tested on) the developed nations. We might not expect the this relationship between inequality and representation to hold in the less developed nations. We simply do not know much about the relationship between gender equality and class in those nations. Gender quality might not be a stratified phenomena in less developed countries, and the women of higher social status may be subject to inequalities in a similar way with the lower classes.

This section has presented the reader with two problems in the literature on socio-economic conditions and women's political representation. I first pointed out that the direct effect of welfare state spending on women's representation is endogenous – female legislators are also known to be more likely than their male counterparts to support welfare expansion. Secondly, the paper also argues that researchers should not expect development and employment to be uniformly beneficial for all women and affect their political participation in a similar manner. Work in other fields has found that gender equality is a stratified phenomenon. Women of higher social class enjoy considerably more equality with men at home and at the work place, and there is every reason to believe that this would also effect their participation in politics. In the following sections I will empirically analyze each of these issued in turn.

4.4. Welfare spending and representation: the empirical relationship

In this section I analyze empirically the problem of endogeneity. A type of structural equation modeling (SEM) known as path analysis (also known as simultaneous equations or causal modeling) is used. SEM allows the estimation of endogenous systems, that is equations where one variable could at the same time be an independent and a dependent variable. Because SEM is often also called causal modeling some take it as a test of causality. I emphasize that SEM, like other statistical methods, cannot in and of itself determine causality, and is a test of association. What we can determine with statistical analysis here is the extent of the problem, that is how strong is the evidence for or against any of the causal structures, or in other words, how serious is the problem of endogeneity.

I test the strength of three different causal paths. First, just as in the literature on descriptive representation, I hypothesize that welfare state spending influences women's political representation. Secondly, like the substantive representation literature, I also hypothesize that women's representation can affect welfare spending. I also allow for a third causal path by which welfare states effect female employment and female employment in turn impacts women's representation. I've added this to see whether welfare states have an indirect effect on representation. Legislators cannot directly increase female employment so the risk of endogeneity would be lower in this case. I analyze the importance of the three causal paths by first estimating a model that includes all three, and then estimate models where each of the three paths are removed one at a time. The model fit of each of the reduced models is then compared to the full model that includes all paths. A causal path is important when removing it reduces model fit significantly compared to the full model.

The structures of the models estimated are shown in Figure 1. The highlighted boxes mark the endogenous variables in the model and the black single-headed arrows reflect the hypothesized direction of causality. For example, in all models the lag of women's representation (percent of women elected into office at the previous election, W_{t-1}) is allowed to predict the current level of female MPs (W_t). In the same manner the in kind family spending at the time of previous election (F_{t-1}) is allowed to influence in kind family spending at the current election year (F_t) and also female employment at the time of the current election (E_t).

The highlighted arrows reflect the causal directions that are of interest here. In the Full model we are assuming that all three causal paths exist: (1) welfare states influence representation through employment, (2) welfare states have an independent direct effect on representation, and, (3) women's representation affects in kind family spending. The following models A, B and C are nested in the full model – these models have the same variables, but fewer paths. In model A I have omitted the direct effect of

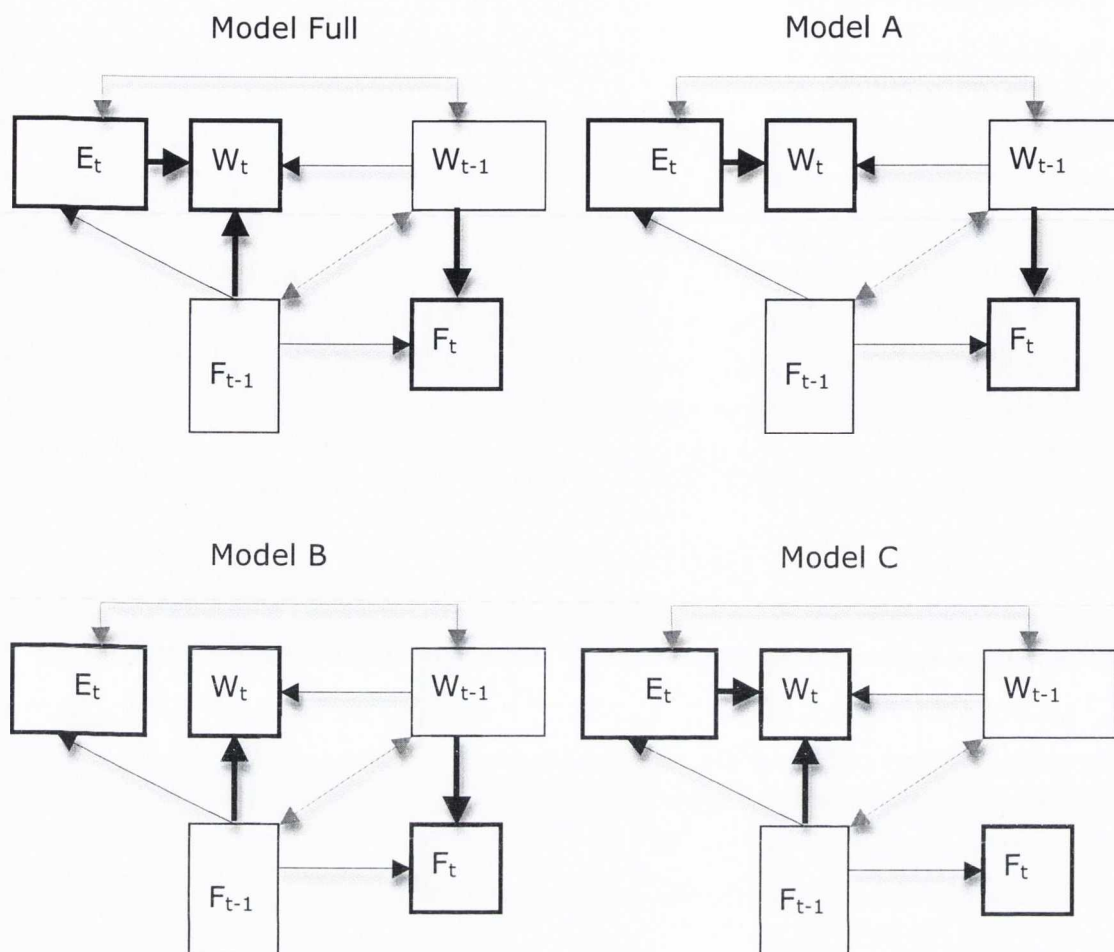


FIGURE 1. Path models of women's representation and family spending. W_t – percent of women in the parliament at current election, W_{t-1} – at previous election, F_t – in kind family benefits, F_{t-1} – in kind family benefits at previous election, E_t – Female labor force as percent of male labor force.

family spending on women's representation ($F_{t-1} \rightarrow W_t$ omitted) and only estimated the indirect and reverse effect. Model B omits the effect of employment on women's representation ($E_t \rightarrow W_t$), and only allows a direct and a reverse effect. Lastly, model C omits the effect of women's representation on family spending ($W_{t-1} \rightarrow F_t$), but allows both the direct and indirect effect of welfare states on representation.

The gray double-headed arrows reflect covariation.¹ The model does not specify what caused women's representation or in kind family spending at the previous election, but we know that the two variables correlate. Also, women's employment should be correlated with representation at the previous election. Without specifying these

¹Because the estimation of structural equation models is based on the variance-covariance matrix of all variables included in the model, the covariation between all pairs of variables either have to be included in the model, otherwise they are assumed to be zero.

paths we assume there to be no correlation between these variables. Omitting relevant correlations will affect model fit.

The model used here is very simple, which affect the sizes of the coefficients. The purpose at this point is not necessarily to determine the size of the effect the explanatory variables have on the dependent variable, but to see whether removing any of the effects is justified.² I also tested a more complicated model which included a large set of covariates, but the main conclusions from those were the same.

The data covers 33 OECD countries, of which the older democracies are observed over three decades (from 1980 to 2010), and the newer ones only the last decade due to the lack of data.³ I have chosen to use the percent of in kind family spending as a percent of GDP to measure welfare states. While total social spending has been the favorite and probably the most easily available indicator, it is an inaccurate measures of the differences between welfare regimes, especially welfare state ideology. Much of the difference in welfare regimes is not in how much is spent, but in how the spending is done (Esping-Andersen, 1990; Huber and Stephens, 2000). Public services (the in kind benefits) are a distinct feature of the social democratic welfare state, while salary related cash benefits are associated with conservative regimes (see Table 6 in the appendix). Total social spending is similar in both regimes, but only the former can be conducive to women's employment and gender equality, while the latter perpetuate the gender inequalities by encouraging women to stay home with children. Thus, we should not necessarily expect total welfare spending to support women's political representation. Female employment as a percent of men's is used as the indicator for gender equality in employment. Women's representation is measured as the percent of seats held in the lower or the single house of the parliament.

The results of the models for all OECD countries are presented in Table 2. The model names reflect the path diagrams shown in Figure 1. The path coefficients are estimated using GLS and can be read like any other regression coefficients. The model fit is assessed by looking at the chi square, root mean square error approximation (RMSEA) and goodness of fit index (GFI).⁴ Structural equation modeling has a strong focus on

²Cees van der Eijk et al. (2007) used SEM in a similar manner when studying the reciprocal effects of subjective economic evaluations and government support.

³New democracies are Chile, Czech Republic, Hungary, Estonia, Korea, Mexico, Poland, Slovakia and Slovenia.

⁴The null hypothesis of the chi square test is that the original and the estimated covariance matrix are the same. Thus if the model fits, we would *not* reject the null hypothesis, and if the fit is poor, we would reject it (the two matrices are different). Nested models can be compared by looking at the change in chi square. If the chi square change is marginal, a simpler model should be preferred. RMSEA penalizes the for any added parameters (path coefficients and covariances). A RMSEA below 0.05 shows a good model fit. The RMSEA is recommended for samples larger than 200, in smaller samples the index can be high and we risk rejecting the model too often. The opposite is true for the chi square test, which rejects the model too often when sample size is above 200. As the sample here is just around 200, both indices are shown. The goodness of fit index should be above 95% for

TABLE 2. Structural equation models of women’s representation in 33 OECD countries

	Full model			Model A			Model B			Model C		
	β	SE		β	SE		β	SE		β	SE	
DV: Percent of women in parliament												
Female MP _{t-1}	0.957	0.029	***	0.966	0.026	***	0.966	0.027	***	0.950	0.030	***
Employment	0.018	0.024		0.024	0.022					0.018	0.024	
Family _{t-1}	0.367	0.555					0.518	0.521		0.461	0.575	
DV: Employment ratio												
Family _{t-1}	14.674	1.253	***	14.690	1.256	***	14.674	1.259	***	14.674	1.293	***
DV: Family in kind benefits												
Family _{t-1}	0.909	0.026	***	0.907	0.026	***	0.909	0.026	***	0.955	0.020	***
Female MP _{t-1}	0.004	0.001	***	0.004	0.001	***	0.004	0.001	***			
N	209			209			209			209		
χ^2	3.025	0.128		3.462	0.326		3.577	0.311		9.712	0.021	**
RMSEA	0.050	(0.000, 0.158)		0.028	(0.000, 0.125)		0.031	(0.000, 0.127)		0.106	(0.036, 0.183)	
GFI	0.994			0.993			0.993			0.981		

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
The table shows the estimated path coefficients, followed by standard errors. The chi square statistic is followed by the p-values. For RMSEA the 90% confidence intervals are shown in parenthesis

model fit; the goal is to construct the most fitting structure between the variables entered into the model. Unlike in regular regression analysis, models with poor fit are rejected in SEM, regardless whether some individual effects are statistically significant or not.

The Full model shows a reasonable fit (RMSEA is 0.05), but we can also see that models A and B are even better (RMSEA is below 0.05). Analysis of the chi square leads to the same conclusions. While the chi square is larger for models A and B, as is usual when paths are removed, the increase in chi square from the full model is not statistically significant. Thus, removing either the indirect or the direct effect of welfare states on women’s political representation does not reduce the explanatory power of the model. Contrary to what has been expected by the descriptive representation literature, these data and models we cannot say that welfare states effect women’s representation. Of all models presented, model C fares poorly according to all criteria and should be rejected. Substantively this means that we cannot remove the reverse effect of women’s representation on family spending from the equation. As suggested by the substantive representation literature, women’s representation has a positive effect on in kind family spending.⁵

good model fit. See Schumacker and Lomax (2004, 100) and Bowen and Guo (2012, 141-146) for more details.
⁵A 10% increase in the share of female MPs increases in kind family spending by 0.04% of GDP. This seems like a small number, but even Sweden, the country with highest in kind family spending, allocates just over 2% of GDP to these benefits. The lowest average in kind family spending (in Canada and Ireland) is 0.11% of GDP and a 0.04% increase would mark a sizable effect in those countries. However, since the model estimating in kind family spending likely omits other relevant explanations we should be very cautious about taking this effect at its face value.

We see from these models also that the effect of employment on women's representation is stronger than that of the effect of in kind family spending. As we well know, the effect of female employment on representation may be contingent on the types of employment taken up by women and that effect has been found to be weaker or even absent in newer democracies. To analyze this, I also ran the same four models on the 24 older OECD members (Appendix Table 5). The size of the coefficient on employment has doubled compared to the results in Table 2 and is now marginally significant in model A. Also, excluding this effect (as in model B) now reduces the model fit considerably. Chi square is increased compared to the full model (the increase is statistically significant at $p < 0.1$ level) and RMSEA shows we should reject the model B. Other results were nearly identical. The full model shows again a reasonable fit based on chi square and GFI, but the RMSEA suggest a weaker fit. Model C has a very poor fit and should be rejected, again suggesting that there is a reverse causal effect. Model A shows the best fit as before – excluding the direct effect of family spending has no significant consequences.

We can make two main conclusions from the results of the structural equation modeling. First and foremost, the comparison of the four different types of models suggest that there is no effect of welfare states, specifically in kind family spending, on women's political representation. Instead we find support for the reverse – women's representation affects in kind family spending. While these results do not conclusively determine the direction of causality, they show the depth of the problem of endogeneity. Based on the evidence, the strong effect of welfare spending on women's representation that some authors find may owe much to the reverse effect of female legislators on welfare states. Using direct legislative outcomes (e.g. welfare spending) to predict representation is highly problematic because these outcomes are decided on by representatives themselves.

Secondly, the empirical evidence of the SEM are less conclusive about the effect of employment, which appears conditional on case selection. We don't find a significant effect of employment on women's representation in the sample of 33 OECD countries, but there is evidence of a stronger effect in the sample of 24 more established democracies. Even stronger is the relationship between employment and representation if we excluded the United States and focused only on the 23 developed nations. In the latter case the fit statistics show that omitting the effect of employment (as in model B) reduces the explanatory power to the point where the model should be rejected. What we should conclude is that the relationship between employment and political representation is not straight forward – not all types of employment are supportive of social, human and financial capital and/or political activism. But, if one was interested in understanding the effect of welfare state spending on women's representation, the

strategy of indirect effect, e.g. through employment and other socioeconomic outcomes, is likely to be more fruitful.

4.5. Class and women's representation

This paper also argued that because gender equality is stratified, favoring the higher socioeconomic classes, class inequalities can affect women's political representation. This section tests the hypothesis using three different measures of inequality. First, the models here attempt to account for the proportion of women who are lower-class status and employed in jobs that are not conducive to political representation. The higher the proportion of women in the lower-class, the larger the potential number of women who are less likely to experience gender equality and who do not benefit from employment or development in a way that is conducive to political participation. I use female low-pay incidence, i.e. the share of female employees who earn less than two-thirds of the median earnings, as an indicator of women's class and employment status.

Secondly, I account for the overall inequalities, by using a measures of low-pay incidence among all employees and the Gini index. While women's low-pay incidence speaks more directly about women's economic position, the other two measures indicate the levels of class inequality in the whole society. The overall inequalities in the society should be of interest because women's employment and salaries are not always reflective of their class. Some women may be willing to accept lower wages knowing that their partner earns a high income. These women are not forced into low-wage labor nor lower-class. The larger the inequalities, the larger the proportion of women we expect to experience gender inequalities and be disadvantaged in participating in politics.

Some may argue that the three variables, female low-pay incidence, overall low-pay incidence and income inequality, are also endogenous to representation – they may be affected by changes in the percent of female legislators for the same reasons as family spending can. The empirical tests, however, do not support this. Granger causality tests showed that including the lagged female representation does not significantly predict any of the three variables and removing the lagged female MPs does not reduce the explanatory power of the models.

The two low-pay incidence measures are available only for 24 countries, restricting the scope of this study (a complete list of countries and average low-pay incidence is in the appendix Table 7, page 69). The Gini index of income inequality is available for all 33 OECD nations. While low-pay incidence is available only for some of the countries, it is still worth using the measure in the analysis, rather than focus solely on the Gini index. The two types of measures, low-pay incidence and the Gini index, correlate strongly, but measure inequalities in a slightly different way. The Gini index is known

TABLE 3. The effect of low-pay incidence on women's political representation

	Low-pay women						Low-pay overall					
	β	SE		k	SE_k		β	SE		k	SE_k	
Intercept	8.525	4.039		55.392	1069.077		6.591	3.907	*	46.600	1145.973	
Female MP _{t-1}	0.846	0.049	***				0.859	0.049	***			
Low-pay	-0.132	0.040	***	-0.854	0.086	***	-0.171	0.057	***	-1.208	0.218	***
<i>Controls:</i>												
Female Employment	-0.045	0.049		-0.292	0.125	**	-0.019	0.049		-0.134	0.133	
Development High	-2.320	5.248		-15.072	1098.492		-6.636	5.349		-46.920	1245.606	
Fem Emp*High Dev	0.059	0.070		0.385	0.187		0.102	0.071	**	0.719	0.223	***
Log(DM)	1.332	0.320	***	8.655	6.549		1.004	0.304	***	7.102	6.661	
ENPP	-0.309	0.363		-3.546	5.104		-0.250	0.365		-2.894	5.513	
Party Quota	0.099	0.024	***	0.235	0.010	***	0.103	0.025	***	0.263	0.012	***
Legal Quota	0.101	0.038	***	0.456	0.069	***	0.085	0.038	**	0.405	0.080	***
<i>Lagged variables:</i>												
ENPP	-0.237	0.344					-0.159	0.344				
Party Quota	-0.063	0.026	**				-0.066	0.026	**			
Legal Quota	-0.031	0.055					-0.028	0.056				
N		118						118				
R ²		0.947						0.946				
Adj. R ²		0.941						0.940				
BG test	0.306	0.580					0.913	0.339				

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
The Breuch-Godfrey test is followed by the p -value.

not to capture where inequalities occur. The low-pay incidence, like some decile ratios, emphasizes inequalities of the bottom earners compared to the middle earners. When inequalities are concentrated at the bottom the low-pay incidence will be high while the Gini index may be relatively low, as is the case in some Eastern European nations. For these reasons the Gini index may not be able to tap into inequalities in some countries as well as the low-pay incidence can.

The results of the dynamic models with low-pay incidence (among women and overall) are shown in Table 3. The two models are based on the same data set. The presented dynamic specification was chosen based on comparisons to the autoregressive distributed lag (ADL) model using the F -test. The initial test rejected the simple lagged dependent variable (LDV) model and a comparison of the coefficients of the ADL and LDV suggested that the lagged values of quotas should be included in the final model. I also included the lagged value of the effective number of parliamentary parties (ENPP) in the model, because, theoretically, party fragmentation should impact representation at the current, but not at future elections. The specification shown in Table 3 allows quotas and ENPP to have a faster adjustment speed than other covariates. The Breuch-Godfrey test shows no residual autocorrelation. (See the methodological appendix, page 135, for a discussion on modeling TSCS data.)

The results show that female and overall levels of low-pay incidence decrease women's political representation. The coefficient on female low-pay incidence in the first model is -0.132, meaning that among the 24 democracies a 10% increase in female low-pay

incidence decreases the share of female MP's by 1.3% in the short-run. The size of the effect is slightly larger for the overall low pay incidence (coefficient -0.171), the increase of 10% in overall low-pay decreases representation by 1.7%. The table also shows the long-run multipliers (k) and their standard errors (SE_k). The long-run multiplier gives the total effect of a point increase in the explanatory variable on women's representation. We see that in the long-run, low-pay incidence has a substantial effect on representation – the percent of female legislators is decreased by approximately 8.5% and 12% for a 10% increase in female and overall low-pay incidence respectively.

Figure 2 provides a dynamic representation of the effect a percent increase in low-pay incidence has over consecutive elections. The figures assume that low-pay incidence will remain at the new higher level (i.e. the increase is permanent). We see again that while initially (at election “0”) the effect is fairly small, women's representation will continue to fall substantially over the coming elections. Four elections after the permanent increase (at election “3”), the point increase in female low-pay incidence would have had half of its total effect on representation. Everything else equal, a country with a point higher female low-pay incidence would have just over 0.4% fewer female representatives. The dynamics are slightly slower for the overall low-pay incidence (the coefficient on the lagged dependent variable in the model is larger) and half the total effect would be felt five elections later (election “4”), when a point increase in overall low-pay would have reduced women's representation by 0.6%. In both cases representation would continue to decline at a decreasing rate, approaching slowly the size of the long-run multiplier.

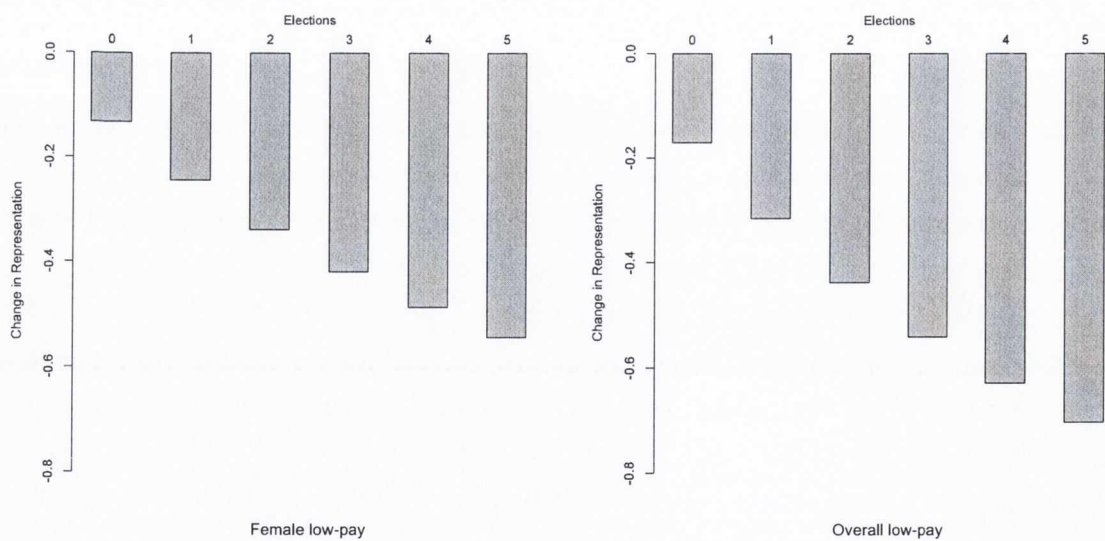


FIGURE 2. The dynamic effect of low-pay incidence on women's representation

Of the other socioeconomic indicators the models also account for the effect of female employment, measured as women's employment as a percent of men's. Employment

is interacted with development to test whether the effect of employment is dependent on development. A binary variable of development is used to avoid spurious regression. The reference category in Table 3 is “medium” level development. We would expect employment to have a stronger effect on representation in the highly developed countries.⁶

We can see that the indicator for female employment does not have a positive effect on representation when accounting for female low-pay incidence (the first model). But, using overall low-pay incidence (the second model), we see that employment can have a sizable effect on representation among the highly developed countries. The marginal effect of female employment in the highly developed nations is 0.083 (0.102-0.019), meaning that for a 10% increase in the female employment index, there is an increase of 0.8% in the short-run. The marginal long-run multiplier of employment is more sizable, 0.585 (0.719-0.134), meaning that in the long-run a 10% increase in female employment would lead to 5.9% more female representatives in the parliament.

The models also include four institutional controls – district magnitudes, to capture the effect of electoral systems, effective number of parliamentary parties to account for fragmentation, and the size of party and legal quotas. Both quotas are measured in percentages.⁷ The institutional control variables have the expected effects. Larger district magnitudes increase women's representation in all models, but the effects are significant in the short and not in the long-run.

The main conclusion from the models in Table 3 is that women's employment in low-paid jobs and overall income inequalities (measured by overall low-pay incidence) reduce female representation. In both cases the immediate effect of low-pay incidence is statistically significant, but fairly small. However, we should expect the full effect socioeconomic conditions on political representation to appear over time. Indeed, the models predict that the difference in women's representation will continue to grow substantially, and, all else equal, countries with higher low-pay incidence will have fewer and fewer women over subsequent elections. In the long-run, countries where female low-pay incidence is 10% higher will have approximately 8% fewer female representatives. For the overall low-pay incidence the model predict the difference to be 12%.

⁶The two development categories were constructed using the 25th percentiles of per capita GDP across all democracies as the cut-off points. That produces four categories of development, but a vast majority of the OECD nations belonged to the two most developed groups of “medium high” and “high”. Few OECD nations also belonged to the “medium low” group. For the regressions in Table 3 the countries the two medium groups were collapsed together because there were too few cases in the “medium low” group. Of other socioeconomic controls female education rates had no impact on representation nor on the coefficients of other covariates.

⁷Legal quotas may differ in how they are enforced, for example, whether there are any placement rules. Since only six elections in the data set of OECD nations had stricter legal quota laws, the effect of these could not be estimated separately. Thus the variable “legal quota” combines all types of legal quotas here.

Thus, any increase in low-pay incidence will be roughly matched by a decrease of the same size in women’s political representation in the long-run.

The previous models included 24 countries and to cover all 33 OECD members I used the Gini index of income inequalities. The data on the Gini index is from Solt (2009), which is the largest cross-national comparable data set on income inequality. The measures reflect household disposable income.

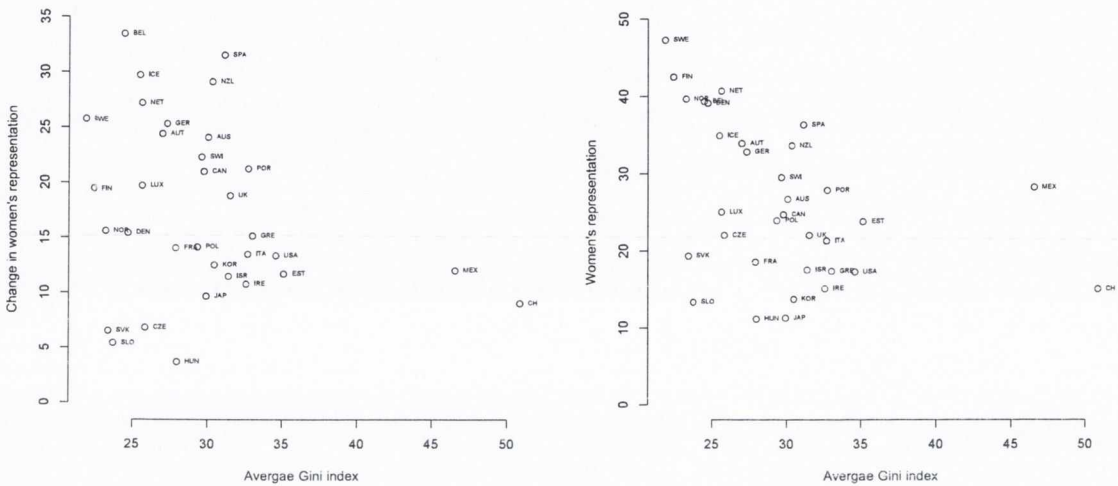


FIGURE 3. Women’s representation and income inequalities in 33 nations.

Again, I expect countries with higher income inequalities to have fewer female representatives and, over time, this difference in representation should also grow. Figure 3 shows the empirical relationship between income inequalities and women’s representation. The x-axis shows the average Gini coefficient between 1980-2010 (1990-2010 for new democracies) and the y-axis show the increase in women’s representation (left panel) and the most recent level of women’s representation (right panel). As predicted, countries with high income inequalities have had a smaller increase in representation and also fewer women legislators after the most recent elections. The exceptions to the rule in Figure 3 are some of the Eastern European nations (Czech Republic, Hungary, Slovakia and Slovenia), where income inequalities are low, but women representation has not increased over the course of 20 years. It is possible that these nations buck the trend because the relationship between class and gender equality does not follow the same logic in East European countries and women, regardless of class, may struggle to achieve gender equality. The other reason for this might also be the mentioned problem that the Gini index does not capture where the inequalities occur.

The multivariate models also showed that including the East European nations affect the results. The Gini index of income inequality had only a marginal effect on representation in the 33 OECD nations, but excluding the East European nations or running

TABLE 4. The effect of income inequality on women's representation

	β	SE		k	SE_k	
Intercept	2.114	2.803		15.858	498.397	
Female MP	0.867	0.037	***			
Lag Inequality	-0.158	0.066	**	-1.185	0.240	***
<i>Controls:</i>						
Log(DM)	0.371	0.206	*	2.783	2.005	
ENPP	-0.098	0.294		-0.058	2.027	
Party Quota	0.061	0.019	***	0.190	0.009	***
Legal Quota	0.074	0.029	**	0.559	0.067	***
Employment	0.078	0.031	**	0.582	0.026	***
Development High	-0.448	0.655		-3.362	23.552	
<i>Lagged variables:</i>						
ENPP	0.090	0.293				
Party Quota	-0.036	0.021				
N		178				
R^2		0.947				
Adj. R^2		0.943				
BG test	0.595	0.441				

the model on the 24 most developed democracies showed that income inequalities significantly reduce women's representation. The model results for the 24 developed nations are shown in Table 4.

The dynamic specification was chosen based on comparisons with the ADL model and the F -tests. It appeared that the current value of income inequality had no immediate effect on representation and all the effect occurred in later periods (in the future). For this reason the lagged value of the Gini index was used in the model.

Just as before, the results show that an increase in income inequality decreases women's political representation. A 10 point increase in the Gini index decreases the percent of women in parliament by 1.6% at the next election. The long-run multiplier of income inequality is approximately -1.2, meaning that a 10 point increase in the Gini index would reduce women's representation in total by -12%. Both of these effects are statistically significant and the size of the effects of the Gini coefficient is very similar to the effect of low-pay incidence in the previous models.

Figure 4 shows how the effect of income inequality is distributed over elections. The effect is shown for a permanent one point increase in the Gini index. As we can see, an increase in income inequality will initially have no effect on representation, but in the long-run, the effect is quite substantial. Just like in the previous models, about half the effect of income inequality is felt six elections later (election "5"). By that time a point increase in the Gini index would have reduced representation by 0.6%. Representation would continue to decline at a decreasing rate and in the long-run any point increase in income inequality would have decreased representation by approximately 1.2%.

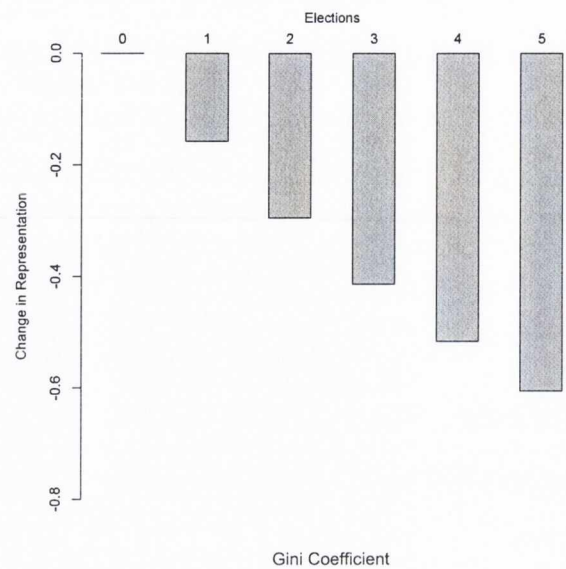


FIGURE 4. The dynamic effect of income inequality on women’s representation

The effects of the other variables in Table 4 are generally as expected. Female employment has a positive effect as predicted. The short- and long-run marginal effect of employment is statistically significant for the highest developed nations. Higher district magnitudes increase women’s representation, but the effect is not significant. The problem here might be the strong correlation between the effective number of parliamentary parties and district magnitudes. Excluding the party system variable will increase the size and the significance of electoral systems. Both quotas have a positive effect on women’s representation.

This section has shown that class inequalities, whether measured as women’s low-pay incidence, overall low-pay incidence or as the Gini index, decrease women’s representation. The results uniformly suggest that inequalities in the developed nations will lead to fewer women to be elected over the course of multiple elections. The three different measures all show that while the initial effect is quite marginal and may even be absent, the effect inequalities have on representation in the long-run is substantial; any point increase in inequality would be matched by a decrease in representation by the same size.

Overall, these findings are an important addition to how researchers currently understand the socioeconomic conditions to affect representation. It shows that while female employment and wealth may be conducive to women’s political activity, the unequal distribution of resources will disadvantage a large group of women and hinder their participation in politics. This would, in the long-run, lead to fewer potential female office seekers and representatives.

4.6. Conclusions

Research on the effect of socioeconomic conditions on women's descriptive representation has mainly analyzed the effects of development and female employment on representation. The general conclusion is that both improve women's representation by spurring on social change, increasing gender equality and by providing women with skills and resources necessary to make a credible bid at the political office. At the same time researchers have struggled to explain the exceptions to this theory, particularly the United States, a wealthy country with traditionally high female employment, but very low political representation. To explain such discrepancies among the developed nations some authors have suggested that welfare regime type and spending interfere with the effects of employment and development. It is usually argued that thin welfare provisions can reduce women's representation.

This paper has argued that there are two problems with the current approach to explaining how socioeconomic conditions impact women's descriptive representation. First, including social spending as a measure of welfare states is highly endogenous. Research on the substantive representation of women has often argued that female legislators are associated with stronger support for welfare state expansion than their male counterparts. In other words, the causal relationship between welfare state spending and representation can run in both directions. Using structural equation modeling the paper analyzed the depth of the problem of endogeneity and found that there is strong evidence for the reverse causality – women's parliamentary seat shares make for a strong predictor of welfare spending. For the purpose of modeling women's representation using welfare spending this is not great news. Spending, a direct outcome of legislating, is endogenous to representation and cannot be used as its predictor.

The point here is, however, not to say that welfare regimes are unimportant for women or for their political representation. The real question is how they matter; for example, welfare regimes are associated with female employment levels, which in turn affect representation. Thus, welfare states can have an indirect impact on women's legislative seats by shaping their socioeconomic position. The structural equation modeling provides some support for this as female employment is a reasonably strong predictor of representation and removing this causal path decreases model fit. But the relationship between female employment and representation is not wholly satisfactory – some countries with high female employment have very few representatives. This brings us to the second contribution of this paper.

The previous work has assumed that once countries develop and female employment increases, the positive effects of both of these will be enjoyed by all (or almost all) women in the society. This, however, is quite far from reality. First, in many wealthy countries women, particularly of the lower classes, are much less likely to fill jobs that

provide the resources and skills necessary to be active in politics. Secondly, research also shows that lower class women (those less educated and employed at low-skill jobs) are also more likely to experience gender inequality at home than women of the higher socioeconomic status. The former are more likely to be "doing gender" by being responsible for the majority of household work and caring for other family members. What this means is that gender equality is a stratified phenomenon, favoring the wealthy and higher educated women. The stratification is highest in countries of high class inequalities.

The stratification of gender equalities, especially in countries of high income inequalities, have major consequences for women's ability to participate in politics and win a seat for representative office. First, even though women's employment may be high in some developed nations, their disproportionate employment low-paid, low-skilled jobs means that a large number of women will not be enjoying the benefits development such as skills and resources. In addition, traditional gender roles are also more likely to be reinforced in the lower-class households. Thus, in countries with high income inequalities, a large proportion of women will be stuck in traditional gender roles. All of this will affect women's decision to run for political office. Traditional culture, women's lower social status, traditional gender roles and socialization will reduce the encouragement and support for female candidates, and will also reduce women's own confidence in their qualifications. As a result, women among the pool of eligibles, i.e. among those qualified for political office, are less politically ambitious as men of the same status. In other words, women seek office less often than men, because the social norm dictates this.

The empirical evidence provided in this paper strongly support this idea and shows that inequalities, whether measured as low-pay incidence or as the Gini index, substantially decrease women's descriptive representation. The dynamic models presented showed that while initially the effect is relatively small, the impact of inequalities is increased over subsequent elections. In the long-run, any point increase in inequalities will be matched by a decrease in female legislative seats of the same size. These results make a major contribution to the literature by helping us understand why in some wealthy democracies with high female employment the political representation of women is below the world average. The unequal distribution of wealth affects the maturation and spread of gender equality. With high income inequalities come high gender inequalities, causing even the very qualified women to never consider running for office. It is also important to stress that the full effect of income inequality will not be felt immediately, but this will accumulate over time. Reducing inequalities to improve women's representation would potentially take a couple of decades before having a substantial impact on female legislative seat shares.

It could be argued that problems of endogeneity may also affect female employment rates and low-pay incidence, but the possible reverse effect here is further removed – legislators cannot as directly effect employment and pay as they can welfare spending. Secondly, women's more equal economic footing generally precedes and surpasses the progress made towards political equality. However, in the future women's descriptive representation may potentially end up on the right-hand side of the equation, that is, as a predictor of socioeconomic outcomes. For example, in Latin-America female representation in parliaments has increased very quickly due to quota adoption, whereas employment rates remain, for now, very low. It is likely that the increased political power of women in Latin-America will, in time, have effect on female employment through policies or changes in public attitudes on women's roles. But for now, in countries where income inequalities are very high, where female employment is either very low or low-paid, women's political representation can most effectively be increased by quotas. Indeed, this may even be the fastest route to increasing women's economic position in the society.

Finally, I emphasize again that the paper has analyzed the effects of class and gender equality on women's representation only among the OECD nations. We might not expect the same relationship between inequality and representation in the less developed nations. First, we simply do not know much about the relationship between gender equality and class in those nations. Gender equality might not be a stratified phenomena in less developed countries, and the women of higher social status may be subject to inequalities in a similar way with the lower classes.

Appendix: Ancillary tests and descriptive data

TABLE 5. Structural equation models of women’s representation in 24 OECD countries

	Full model			Model A			Model B			Model C		
	β	SE		β	SE		β	SE		β	SE	
DV: Percent of women in parliament												
Female MP _{t-1}	0.945	0.032	***	0.949	0.029	***	0.967	0.029	***	0.944	0.032	***
Employment	0.044	0.029		0.047	0.027	*				0.044	0.029	
Family _{t-1}	0.160	0.594					0.519	0.561		0.175	0.621	
DV: Employment ratio												
Family _{t-1}	14.733	1.207	***	14.738	1.207	***	14.733	1.227	***	14.733	1.261	***
DV: Family in kind benefits												
Lag DV	0.911	0.028	***	0.911	0.028	***	0.911	0.028	***	0.960	0.022	***
Female MP _{t-1}	0.004	0.001	***	0.004	0.001	***	0.004	0.001	***			
N	169			169			169			169		
χ^2	3.660	0.161		3.729	0.292		5.892	0.117		9.536	0.023	**
RMSEA	0.069	(0.000, 0.180)		0.037	(0.000, 0.138)		0.074	(0.000, 0.164)		0.112	(0.037, 0.195)	
GFI	0.992			0.991			0.986			0.978		

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
The table shows the estimated path coefficients, followed by standard errors. The chi square statistic is followed by the p-values. For RMSEA the 90% confidence intervals are shown in parenthesis

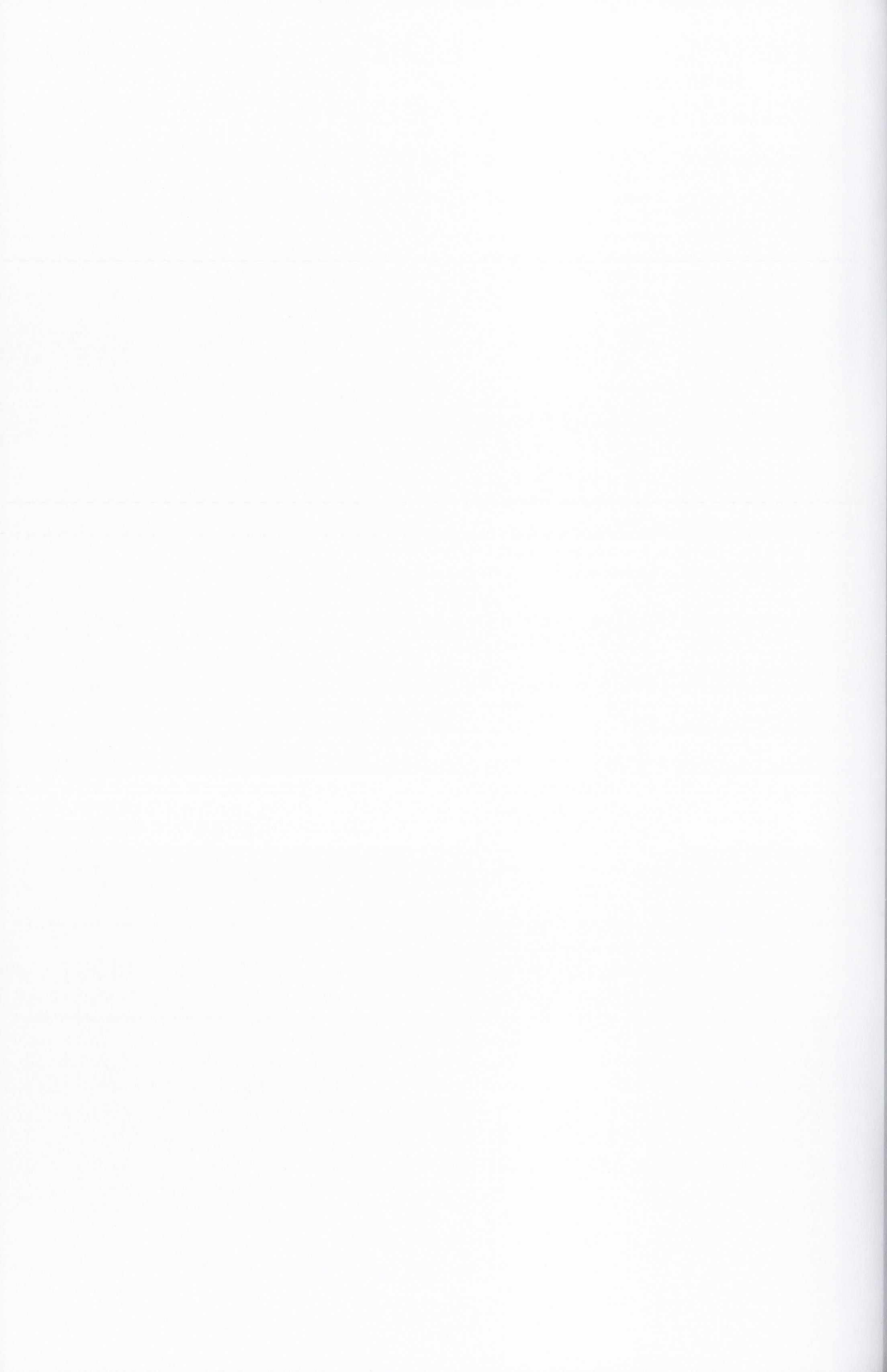
TABLE 6. Public spending by welfare regime, as % of GDP

	Conservative	Liberal	Social	Others
Total social	24.24	22.74	16.13	16.04
In kind	10.33	7.27	6.97	5.20
Cash	12.95	14.85	8.79	10.53
Total family	3.15	2.07	1.44	1.13
In kind	1.53	0.53	0.32	0.33
Cash	1.62	1.56	1.13	0.81

Note: “Others” include new democracies of Eastern Europe, South America and Korea.

TABLE 7. Income inequalities in 33 OECD nations, averages over 1980-2010

Country	Gini	Overall Low-pay	Female low-pay
Sweden	21.83		
Finland	22.40	6.31	9.87
Norway	23.24		
Slovakia	23.40		
Slovenia	23.73		
Belgium	24.48	5.30	10.83
Denmark	24.72	10.71	15.61
Iceland	25.52	18.01	23.17
Netherlands	25.66	12.31	27.93
Luxembourg	25.66		
Czech Republic	25.86	15.83	25.09
Austria	27.03	15.60	28.89
Germany	27.33	19.69	31.89
France	27.92		
Hungary	27.98	20.82	24.04
Poland	29.34	22.89	24.86
Switzerland	29.63		
Canada	29.78	22.41	21.82
Japan	29.93	16.55	38.51
Australia	30.07	14.28	19.67
New Zealand	30.35	12.84	15.59
Korea, South	30.47	23.83	46.36
Spain	31.14	15.98	22.40
Israel	31.40	22.70	30.52
United Kingdom	31.52	19.97	35.51
Ireland	32.58	20.43	27.09
Italy	32.71	8.83	12.53
Portugal	32.74	14.79	21.16
Greece	33.03	16.82	22.05
USA	34.60	23.74	32.25
Estonia	35.14		
Mexico	46.56		
Chile	50.86	22.03	24.06



CHAPTER 5

Conditional effects of electoral institutions

ABSTRACT. A large body of research has suggested that various institutional settings impact women's political representation. High district magnitudes, party centered electoral systems and quotas increase the share of female MPs. The usual approach to date has been to look at one institutional aspect at a time, ignoring the interactive effects of institutions. This paper looks at the effects of district magnitude, personal vote incentives and quotas in relation to each other and to the dominant values of the society. I argue that party centered systems do not have an independent positive effect on women's representation, but they increase the effect of quotas. High district magnitudes can increase female representation, but this effect is conditional on public attitudes towards female leadership.

5.1. Introduction

Institutional variables have probably received the most attention in the women's descriptive representation literature. The earlier works focused on the electoral system and argue that PR systems and high district magnitudes increase women's parliamentary representation. Today, attention has also extended to other electoral institutions. First, with the use of quotas increasing rapidly over the past 15-20 years, the focus of attention has shifted towards them – if and when quotas increase female legislative seat shares. Second, electoral systems differ in the extent they provide the candidates with personal vote incentives. Women might be less successful in a candidate centered system where the focus is more on the candidate rather than the party.

While the independent effect of these three electoral institutions – district magnitudes, quotas and personal vote incentives – is plausible, they do not exist in isolation from each other or from other factors such as values and norms of a society. The effect of any of them may be increased, moderated or even eliminated depending on the context. In a study of 75 countries this paper makes a novel contribution by analyzing the conditional effects of electoral institutions. I will show that personal vote incentives do not have an independent effect on female representation, but they may be seen as facilitators for the effect of legal quotas. Specifically, the effect of legal quotas is larger under systems where voters choose between parties rather than candidates. The paper also shows that large district magnitudes have a very strong positive effect on women's political representation when public attitudes are favorable towards female leadership.

However, as attitudes towards female leadership become more negative, the effect of high district magnitudes is reduced and may even be absent.

The paper first reviews the literature on each of the electoral institutions and then proposes a theory on how to understand these effects in unison with each other and the dominant values. Following, in sections 5.4 and 5.5, I will empirically test the interacting effects of personal vote incentives and quotas, and, district magnitudes and values.

5.2. District magnitude, personal vote incentives and quotas

Electoral systems hold such prominence in the field of descriptive representation that no study should overlook them. Earlier works frequently found PR systems to be, on average, related to higher shares of female MPs (Duverger, 1955; Rule, 1987; Rule and Zimmerman, 1994). The conclusions reached decades ago have frequently been retested and confirmed using better measures (district magnitudes instead of a categorical system type variable), better data (increased number of cases) and improved modeling such as advanced multivariate methods (e.g. see Salmond, 2006; Paxton, Hughes and Painter, 2010). However, an increasing number of works on newer democracies in Eastern Europe, Africa and Latin America have found the effect of PR systems and district magnitudes to be much smaller or even absent (Yoon, 2004; Matland, 1998; Moser, 2001; Viterna, Fallon and Beckfield, 2008). To understand what might cause these discrepancies we have to analyze the causal mechanism between district magnitudes and female representation.

In proportional systems parties nominate multiple candidates in a single district, which often means that the pool of candidates is more diverse in terms of gender and other social characteristics under PR than in plurality-majority systems. As parties also frequently win more than one seat per district, the likelihood of some of the representatives being female is increased. Two assumptions are implicit in this mechanism. First, the effect still rests on party and voter willingness to support female candidates. If party executives in PR systems believe that voters have a strong negative disposition towards female candidates they may still not nominate female candidates or have them placed in unelectable positions on party lists. Similarly, if voters are biased against women, they may, in preference voting systems, vote women out of office. This implies that the effect of district magnitudes is conditional on attitudes towards female leadership. To date, there is no research that has explicitly tested the effect of district magnitudes conditional on dominant values. Matland and Brown (1992) are an exception, as they argue that an increase in district magnitudes should increase women's representation in traditionalist societies. However, they find no empirical support for this in US state elections.

Second, the account above implied that the positive effect of PR systems lies in large party magnitudes, i.e. the number of seats parties win in districts. While in general parties in PR systems do win multiple seats in districts, this is not universal. For example, under PR nascent party systems can become inundated with many small and medium sized parties, reducing the party magnitudes. When the number seat-winning parties is large, each receiving only 1-2 seats in a district, the candidates placed lower in party lists will not be elected. This would mean that women placed lower on the list would be less likely to win a seat. In such cases proportional systems should lose their comparative advantage before SMD. While this point has been emphasized previously (Matland, 1993; Darcy, Welch and Clark, 1994, 151), it has rarely been taken into account.¹

It has also been argued that PR systems benefit women because they are more party than candidate centered (Rule, 1987; Kenworthy and Malami, 1999). Parties may be more reluctant in candidate centered systems to nominate women because elections focus on the appeal of the individual rather than the party. But not all PR systems minimize personal vote incentives. In addition to the district magnitude Carey and Shugart (1995) distinguish three elements that impact personal vote incentives: the ballot structure ("ballot" for short), the degree to which candidates are elected on an individual or a party vote ("vote") and the extent to which votes can be pooled ("pool"). If parties control the order and access to ballots (closed ballots/lists) candidates have little incentive to garner personal vote and these systems can be classified as party centered. But if access to ballots or the rank is not controlled by the parties, the candidates have much more incentive to seek a personal vote. These systems are candidate centered. Systems that allow voters to "disturb" the rank order of candidates are the middle ground between the two extremes. In terms of "vote", the systems that allow voters to choose only between parties provide little personal vote incentives and are the most party centered. The systems that make voters choose only between candidates are candidate centered. Again a the middle category is defined as those electoral systems where voters have more than one vote or can choose whether to cast and individual or a party vote.

The variables "ballot" and "vote" are similar and overlap in many cases. For example, in systems where voters have to choose between parties, parties must present a fixed ballot that voters cannot disturb, i.e. when a system is party centered on "vote", it has to be party centered on "ballot". But the two are not exactly the same. To understand the differences, consider the systems in Finland and Estonia. In Finland parties present an alphabetical list of candidates (parties do not control the rank) and voters have to choose between candidates. In terms of ballot and vote Finland is most

¹But see Reynolds (1999); Yoon (2004), who have controlled for fragmentation by including a measure for the number of parties.

candidate centered. In Estonia, however, parties rank order the ballot, meaning that the “ballot” variable will be at medium and not the most candidate centered. Because voters still have to choose only between candidates in Estonia, the “vote” will be most candidate centered.²

The “pool” variable distinguishes party centered systems as those where votes are pooled across the whole party. When there is no pooling of votes the system provides personal vote incentives and is described as candidate centered. Pooling at sub-party level provides for the middle ground between the candidate and party centered systems.

Thames and Williams (2010) use the above coding to test the effect of personal vote incentives on the percent of female representation. They find that all three elements individually, and in aggregate, are related to women’s representation – *ceteris paribus*, candidate centered systems have fewer female representatives than party centered systems. Similarly, Valdini (2012) argues that candidate centered systems also reduce the number of female candidates. However, she further adds that the strength of the relationship between personal vote incentives and female candidacy is affected by gender norms. Candidate centered systems only decrease the percent of female candidates when a large segment of the population supports traditional gender norms. Personal vote incentives have no effect when traditional norms are not prevalent.

Valdini (2012) points to one of the major flaws in the theory between personal vote incentives and female representation. The theory rests on the assumption that voters (and not parties) are biased against female candidates, something that has not found much empirical support. The somewhat unfounded assumptions may be the reason why the findings on personal vote incentives are not robust, (e.g. Schwindt-Bayer (2009) and Schmidt (2009) found no positive effect of closed lists on women’s representation).

Personal vote incentives may also interact with the use of quotas. Two types of quotas are used in democratic countries: party quotas, implemented voluntarily by individual parties, and, legal quotas, legislated by election law and applying to all parties in the system. Quotas can be effective in overcoming many other obstacles, such as socioeconomic disadvantage, faced by women (Goetz, 1998) and provide a “fast track” to women’s political representation (Dahlerup and Freidenvall, 2005). But sometimes quotas do not produce the desired results. For example, the effectiveness of party quotas in increasing women’s representation is dependent on major parties’ willingness to embrace affirmative action. Voluntary quotas used only by fringe parties have little direct effect on the outcome (Matland, 2006). Evidence, however, suggests a contagion effect in quota adoption – once some parties, regardless the size, start using them, other parties frequently follow suit (Kittilson, 2006; Meier, 2004). In general, party and

²See Carey and Shugart (1995) for a full discussion on different combinations.

national level empirical evidence suggests that voluntary gender quotas have a strong impact on the percent of female delegates (McAllister and Studlar, 2002; Kittilson, 2006, 48-49).

The effectiveness of legal quotas is dependent on laws regarding implementation, the most important aspects here being enforcement and placement mandates (Schwindt-Bayer, 2009; Jones, 2004, 2009; Yoon, 2004; Baldez, 2007). Without enforcement, parties can avoid fulfilling the quota size requirement. Without placement mandates female candidates may end up at unelectable positions on party lists. Schwindt-Bayer (2009), for example, finds that without any enforcement or placement requirement a percent increase in quota size increases women's representation by only 0.35 percentage points, but with both enforcement and placement the effect jumps to 0.92.

Once implemented, quota effectiveness may depend on personal vote incentives. When the ballots are closed and voters have to choose between parties, we might expect quotas to have a stronger effect on women's representation, as voters cannot override the quota requirements. But when ballots are open or flexible and when voters can or have to choose between candidates, they may undo the effect of quotas. Evidence of this is provided by Jones (2009), who finds legal quotas in South America to be more effective in closed list systems. But he also adds that more important than personal vote incentives in determining women's representation is the difference between whether the legal quotas are strict or not.

5.3. The interactive effects of institutions

The above literature points to a number of interactive effects between institutions and values. This section clarifies these interactions, focusing mainly on the relationship between quotas and personal vote incentives (Figure 1), and electoral systems and public attitudes (Figure 2). In all figures female representation is plotted against institutions. Different value systems are differentiated by numbers, with the highest number (10) representing the domination of traditional values and the lowest (1) the most non-traditional (i.e. egalitarian) values.

The left-hand panel of Figure 1 presents a full theoretical model of the interaction between personal vote incentives, legal quotas and values. Presented are four scenarios, I will first discuss the two extreme cases. In a society with no gender discrimination and fully egalitarian values (score 1) we would expect women's representation in the parliament to be high regardless of the legal quota size (LQ) or personal vote incentives. Even if quotas were small the parties would nominate as many men and women and the voters would not choose candidates of one gender over the other. If the society was, however, dominated by very traditional values (10) we expect legal quotas combined

with a candidate centered system (LQ & CC) to have no effect on women's representation. Though the parties' would be legally obliged to file a certain percent of female candidates, the voters would vote them out of the parliament in open lists. However, if a country with very traditional values introduced a party centered systems with legal quotas we would however expect legal quotas to increase women's representation approximately to the size of the quota.

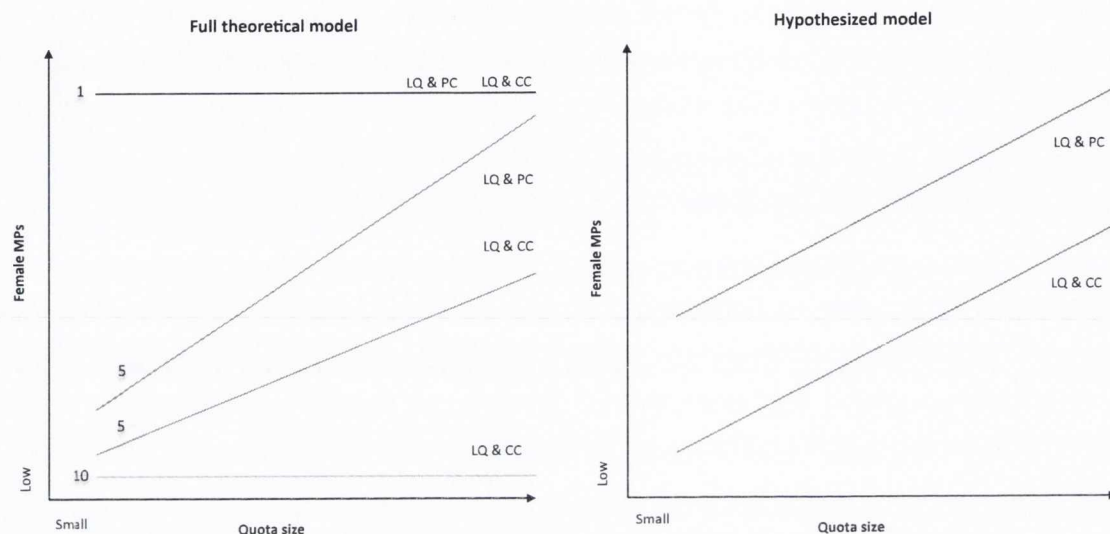


FIGURE 1. The effect of quotas and personal vote incentives on women's representation. *LQ & PC* - legal quotas party centered, *LQ & CC* - legal quotas, candidate centered

The other two lines in the left-hand panel of Figure 1 describe a society with a mix of traditional and egalitarian values (score 5). Here we would expect legal quotas to be more effective in party centered systems (LQ & PC), because in candidate centered systems (LQ & CC) some voters holding traditional values may still vote based on candidates' gender. As the norms in the society become more egalitarian, we may expect the difference between the party and candidate centered systems to diminish.

The two theoretical examples of fully egalitarian and fully traditional societies are extremes that are nonexistent among the democracies today. What we observe empirically falls below the two and thus it makes sense to simplify the model for empirical testing. The right-hand panel shows the model that is hypothesized and tested later empirically. We expect legal quotas to be more effective in party centered systems and the effect is constant regardless the quota size or dominant values of the society. The effect is restricted to be constant due to data constraints explained later.

The theoretical expectations are different when a country uses party quotas. I do not expect personal vote incentives to make a difference to the effectiveness of party quotas. Voluntary party quotas are not binding and in a traditional society parties might not hold themselves to implementing them. Party quotas do not necessarily give women

the same advantage in the nomination phase that legal quotas do. Implementation of party quotas depends mostly on values and their effectiveness should be stronger in egalitarian societies, where parties hold themselves to it.

Figure 2 describes the effect of district magnitudes on women’s representation conditional on culture. When the most traditional values dominate in a country (10) we would expect district magnitudes to have no effect on the number of female representatives elected to the parliament. The positive effect of PR systems still relies on party willingness to file some female candidates and at least some voters to be willing to vote for them. Without any of the above the PR system cannot have an advantage over SMD. There should also be no effect in a completely egalitarian society (score 1), but this time because parties would be just as likely to file a female as a male candidate in both SMD systems and under PR. The same applies to voters, who would be as likely to cast a vote for a women as for a man, regardless the system.

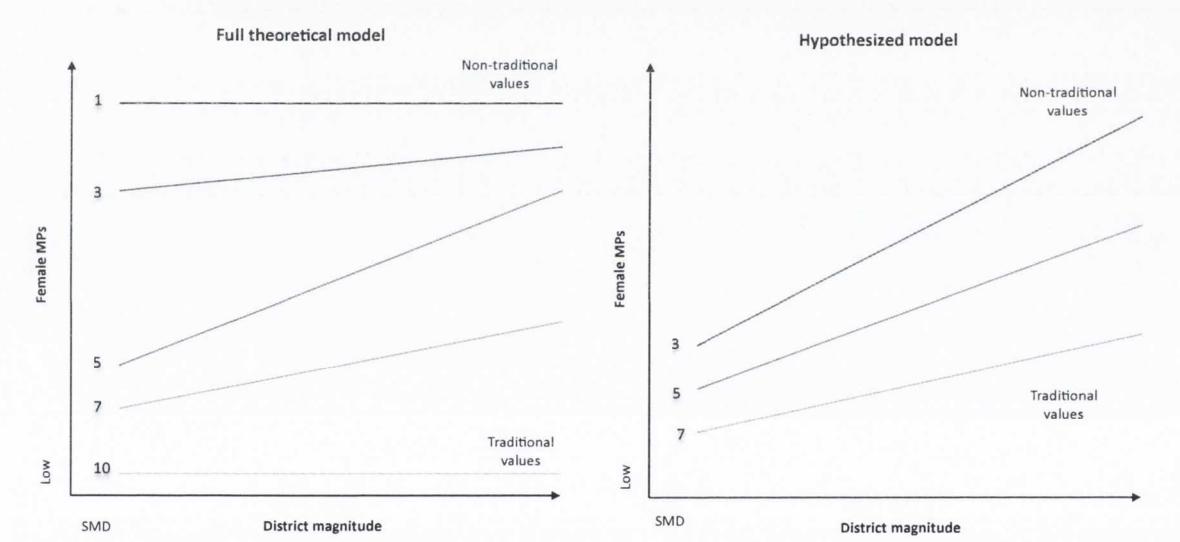


FIGURE 2. The conditional effect of district magnitude on women’s representation

The effect of PR systems should be most visible when the society represents a mix of values. Initially, as the traditional values begin to subside (score 7), the percent of women elected under PR systems becomes slightly larger than in countries with SMD. The positive effect of district magnitudes continues to grow as the society becomes more egalitarian (score 5). But at a certain point, when the society becomes very close to a fully egalitarian society (3), the high district magnitudes should start losing their comparative advantage before the SMD.

The data constraints again make us simplify the model for estimation. The simpler hypothesized version in the right-hand panel of Figure 2 excludes first the two extreme cases of completely traditional and egalitarian societies that we do not observe in practice. Secondly, it also removes the reverse dynamics by which the PR systems

start losing their advantage over SMD in societies close to perfectly egalitarian values. The simplified model predicts an increasing advantage of the PR systems as the values become less and less traditional.

One can question whether the simplification does justice to the complexity of reality. As we do not observe the full range of the variable “values” it is difficult to reliably estimate a more complicated model. Secondly, even for the observable range of the “values”, we are very limited with the number of data points available for the study. We only have enough data to estimate a cross-section model, making the degrees of freedom fairly limited and the testing of a more complex model unreliable. So, the simplification is a necessity, but, the simplified model does not differ much from the full model in the observable range of the data.

5.4. Quotas and personal vote incentives

The purpose of this section is to test empirically whether the effect of personal vote incentives on women’s representation is related to quota usage. The time-series cross-section (TSCS) data used here covers democratic elections between 1980-2010 in 75 different countries. The data are unbalanced as some countries have been democratic throughout the whole time period, but others have democratized more recently or held only a few democratic elections. The TSCS models are all dynamic models, allowing us to estimate both the short and long-run effects. I tested various dynamic specifications before deciding on the lagged dependent variable (LDV) model. (See the methods appendix, page 135 , for a discussion on dynamic modeling.)

To capture personal vote incentives the models use a three category variable for “ballot” and “vote”, where the reference level is the most party centered system.³ “Ballot” measures party control over rank and access to ballots. Open ballots (marked “open” in tables) are those where the party does not control access or rank and flexible ballots (“flexible”) denote cases where the party may control rank and access, but voters have an impact on the final rank ordering. The reference category is the closed ballot where parties have full control over access and rank. The variable “vote” captures the choices available to voters. The system is candidate centered when voters have to choose between candidates (“candidate”). The electoral systems that allow candidates to choose whether to vote for a candidate or a party are denoted as “flexible”. The reference category of the “vote” variable describes systems where voters have to choose between parties.

³The data is mainly from Johnson and Wallack (2010). For mixed systems the mentioned authors have calculated the weighed averages of the ballot, vote and pool. To facilitate the use of these codings in a regression the weighed averages are grouped with the closest category.

Due to high collinearity between the two types of incentives they cannot be used simultaneously and their effect is tested separately. To obtain a single measure of personal vote incentives, the countries with closed ballot, party voting and complete pooling were collapsed into one category – the party centered systems. All remaining cases are described as candidate centered.⁴

Party quotas, weak legislative quotas and strict legislative quotas are all measured separately as previous research suggest that their effects may be different. Weak legal quotas are defined here as quotas without enforcement and/or placement rules. Strict legislative quotas are those where the law provides for both enforcement and placement. All quotas are measured as the size of the quota, e.g. a 30% weak legislative quota is coded as 30. For party quotas the size reflects the average size of party quotas for those elections where approximately 40% of the seats were won by parties using quotas. This is to ensure that a significant proportion of seats are held by parties using quotas.⁵

Electoral systems are measured by the average district magnitude (DM). In mixed systems the weighed average is used. The variable is also logged because the relationship between DM and women's percent is nonlinear – the effect is strongest when the district magnitude increases from a small value such as 1-3 to a value of 6-10 and weaker when the increase is from 10 to 13 to a size of 16 to 20 seats.

Party systems are measured using the effective number of parliamentary parties. Using parliamentary parties is theoretically more suitable than electoral parties because the former reflects the actual outcome in the parliament. Using electoral parties would also decrease the number of cases because data on party vote shares for some African and Latin American countries was not available. For robustness the models below were tested using the effective number of electoral parties, but the results did not differ from the ones presented here.

⁴Models that test the effect of “pool” separately are not shown because the variable distinguishes mainly between the PR and SMD systems, rather than between different PR systems (as do “vote” and “ballot”). The countries that have no pooling are either ones using SMD or mixed systems where the SMD tier is very large compared the PR tier. The only PR system with no pooling of votes is the SNTV, but these cases are extremely rare. Due to the above, the variable “pool” is similar to that of the district magnitude (i.e. the two are collinear to an extent). It's difficult to disentangle whether pooling has an independent effect or if it is picking up some of the effect of district magnitudes. When I tested the effect of pooling, it performed similarly to the variables “ballot” and “vote”, but reduced the effect of district magnitudes.

⁵The three variables, party and legal quotas, are coded as mutually exclusive and there may be a risk of multicollinearity. Countries with a high value on one are bound to have zero on another. Checking showed that the bivariate correlations are low.

TABLE 1. The effect of personal vote incentives on women’s representation (quotas excluded)

	Ballot			Vote			Combined effect		
	β	SE		β	SE		β	SE	
Intercept	3.238	1.670	**	3.085	1.653	*	2.946	1.658	*
Female MP _{t-1}	0.907	0.025	***	0.910	0.025	***	0.916	0.025	***
Ballot:									
Flexible	-0.822	0.448	*						
Open	-1.448	0.575	**						
Vote:									
Preference				-1.230	0.445	***			
Candidate				-0.910	0.840				
Combined effect:									
Candidate Centered							-0.885	0.478	*
Controls:									
Log(DM)	0.374	0.186		0.423	0.166	**	0.497	0.164	***
ENPP	-0.154	0.115		-0.109	0.117		-0.134	0.116	
Development:									
Medium Low	0.698	2.389		0.689	2.387		0.694	2.397	
Medium High	-1.715	2.200		-1.392	2.168		-1.232	2.185	
High	-5.762	3.197	*	-5.252	3.197		-5.086	3.267	
Female Employment:									
Employment	-0.003	0.023		-0.004	0.023		-0.005	0.023	
Emp*Med Low	-0.000	0.034		-0.001	0.034		-0.003	0.034	
Emp*Med High	0.034	0.032		0.030	0.031		0.027	0.031	
Emp*High	0.095	0.043	**	0.089	0.043	**	0.085	0.043	*
N		449			449			449	
R ²		0.885			0.885			0.884	
Adj. R ²		0.881			0.882			0.881	
BG test	1.548	0.213		1.530	0.216		1.420	0.233	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$
Note: the Breusch-Godfrey test is followed by the p -values.

The socioeconomic controls include women’s employment as a percent of men’s employment and a four-category measure of development.⁶ The two variables are also interacted as previous research suggests female employment to have an effect only in the developed and not in the less developed countries (e.g. see Kunovich and Paxton, 2005; Matland, 1998). I expect the marginal effect of employment to be larger and statistically significant in the developed nations. For the less developed countries I expect the marginal effect to be small and not statistically significant.⁷

To understand what effect omitting quotas has on the perceived effect of personal vote incentives I first estimated models without quotas. Table 1 shows the results. The substantive conclusions from all these models are the same – when quotas are not accounted for, personal vote incentives reduce women’s political representation. The

⁶The categorical development variable is preferred to the per capita GDP in the dynamic TSCS models to avoid spurious regression. Categories are based on per capita GDP, constant 2000 US dollars. The cut-off points used are the 25th, 50th and 75th percentiles.
⁷Data on enrollment in third level education were not available for all countries, but models including education were tested on the slightly smaller sample. Since the inclusion of this variable has little effect on the results it was omitted from the final analysis.

model “Ballot” shows that using flexible ballots reduces female representation in the short-run by 0.8% and open lists reduce representation by 1.5% compared to the closed ballot. In the “Vote” model preference voting reduces female representation by 1.2% in the short-run compared to voting for a party only. However, voting for candidates only has no effect compared to voting for parties. The final model, with the combined effect, shows that candidate centered systems reduce female representation by approximately one percent in the short-run. Though the table does not show this, I also calculated the long-run multipliers for the different measures of personal vote incentives. The long-run multipliers show the total effect of a unit increase in the explanatory variable on the dependent variable. The long-run multipliers of the personal vote incentives were large in all models (e.g. over time preference voting reduced female representation by 13% compared to voting for a party), but none of these were statistically significant.

The effects of the other variables are as expected and do not in general depend much on how personal vote incentives are measured. A closer examination of the control variables is provided for the models that include quotas.

Table 2 adds the three types of quotas to the models. The conclusions drawn now about personal vote incentives are quite different. Ballot structure, voting for parties or candidates and the combined effect of candidate centered systems have no *independent* effect on women’s representation. But, personal vote incentives can impact the effect legal quotas have on women’s representation, especially in the long-run.

The three models all show that the effect of both types of legal quotas is generally reduced when personal vote incentives are increased. For example, the model “ballot” shows that a 30% weak legal quota (WLQ) would increase women’s representation immediately by 3.6% (0.119×30) in closed ballot systems. When ballots are flexible, the marginal effect of the 30% WLQ is slightly larger 4% ($[0.119 + 0.016] \times 30$) and also statistically significant. The marginal effect of the same weak legal quotas in open list systems is, however, only 0.4% ($[0.119 - 0.106] \times 30$) and not statistically significant. Thus, while weak legal quotas increase women’s representation in a similar manner under closed and flexible ballots, the effect of weak legal quotas is absent in open lists. Strict legal quotas (SLQ) have a slightly larger effect on women’s representation than WLQ. In flexible lists the marginal effect of strict legal quotas is halved (the effect is significant only at $p < 0.1$ level). There were no countries that used simultaneously strict legal quotas and open lists.

The conclusions from the “vote” model are similar – the effect of both weak and strict legal quotas is the same as before when voters have to choose between parties (this has to be so by definition, as when the voters choose between parties, the ballots have to be closed). Here, preference voting halves the effect of both weak and strict legal quotas and neither of the marginal effects are statistically significant.

TABLE 2. The effect of personal vote incentives and quotas on women’s representation

	Ballot			Vote			Combined effect					
	β	SE		β	SE		β	SE		k	SE _k	
Intercept	3.026	1.626	*	3.051	1.615	*	2.810	1.621	*	17.444	105.151	
Female MP _{t-1}	0.833	0.029	***	0.835	0.029	***	0.839	0.029	***			
Ballot:												
Flexible	-0.194	0.467										
Open	-0.381	0.593										
Vote:												
Preference				-0.544	0.455							
Candidate				-0.221	0.857							
Combined:												
Cand Cent							-0.083	0.508		-0.514	10.051	
Quotas:												
Party Quota	0.037	0.012	***	0.038	0.012	***	0.039	0.012	***	0.242	0.005	***
Weak Legal Quota	0.119	0.028	***	0.118	0.028	***	0.136	0.033	***	0.844	0.056	***
WLQ*Flexible	0.016	0.058										
WLQ*Open	-0.106	0.051	**									
WLQ*Preference				-0.068	0.044							
WLQ*Candidate				0.068	0.099							
WLQ*Cand Cent							-0.065	0.042		-0.406	0.071	***
Strict Legal Quota	0.137	0.040	***	0.141	0.039	***	0.156	0.043	***	0.968	0.060	***
SLQ*Flexible	-0.070	0.054										
SLQ*Open	NA											
SLQ*Preference				-0.088	0.054							
SLQ*Candidate				NA								
SLQ*Cand Cent							-0.097	0.054	*	-0.601	0.107	***
Controls:												
Log(DM)	0.675	0.195	***	0.653	0.169	***	0.736	0.166	***	4.568	0.936	***
ENPP	-0.204	0.115	*	-0.179	0.118		-0.210	0.115	*	-1.301	0.526	**
Development:												
Medium Low	-1.492	2.355		-1.112	2.345		-1.238	2.352		-7.686	210.561	
Medium High	-2.922	2.142		-2.836	2.113		-2.720	2.127		-16.887	169.803	
High	-9.097	3.206	***	-8.450	3.198	***	-8.627	3.285	***	-53.555	315.643	
Female Employment:												
Employment	-0.004	0.022		-0.004	0.022		-0.004	0.022		-0.024	0.019	
Emp*Med Low	0.022	0.033		0.018	0.033		0.017	0.033		0.107	0.042	**
Emp*Med High	0.045	0.031		0.045	0.030		0.041	0.030		0.256	0.035	***
Emp*High	0.137	0.043	***	0.131	0.043	***	0.129	0.043	***	0.804	0.052	***
N		449			449			449				
R ²		0.894			0.894			0.893				
Adj. R ²		0.889			0.890			0.889				
BG test	0.597	0.440		0.601	0.438		0.620	0.431				

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$
Note: the Breusch-Godfrey test is followed by the p -values.

The final model combines the different personal vote incentives into party centered systems (reference category) and candidate centered systems. The results of the combined effect are the same as in the previous models. While candidate centered systems do not have an independent effect on women’s representation, the effect of legal quotas is reduced in these systems. For this model I have shown the marginal effects and the confidence intervals of legal quotas in Figure 3. For comparison, I’ve also added party quotas. All effects are calculated for a 30% quota.

Figure 3 shows that legal quotas are most effective in party centered systems, where a 30% quota would increase women's representation on average by 4-5% immediately (for weak legal quotas we get $0.136 \times 30 = 4.1\%$, for strict we have $0.156 \times 30 = 4.7\%$). Both types of legal quotas are less effective in candidate centered systems, where the effect is approximately halved ($[0.136 - 0.065] \times 30 = 2.1\%$ for weak and $[0.156 - 0.097] \times 30 = 1.8\%$ for strict legal quotas). According to these data, the marginal effect of weak legal quotas is still statistically significant, but for strict legal quotas this appears not to be so as the confidence intervals include zero. This is somewhat surprising, but should be interpreted in light of data availability. Strict legal quotas are less frequent in the data set and the low significance could thus be due to difficulty in estimation. Party quotas can also increase women's representation and when at least 40% of seats are held by parties using quotas, women's representation can be expected to increase by 1% for an average 30% quota.

Interestingly, these results suggest that enforcement and placement rules make little difference in the effectiveness of quotas. Rather, the major dividing line in effectiveness is between candidate and party centered systems. This is contrary to the findings of Jones (2009), who argues that the main difference is between weak and strict quotas. However, he groups countries with weak quotas together with those using no quotas. Thus, he is unable to accurately measure the effect of weak quotas and this may part of the reason the conclusions here are different. (Jones also covers only Latin-American countries.)

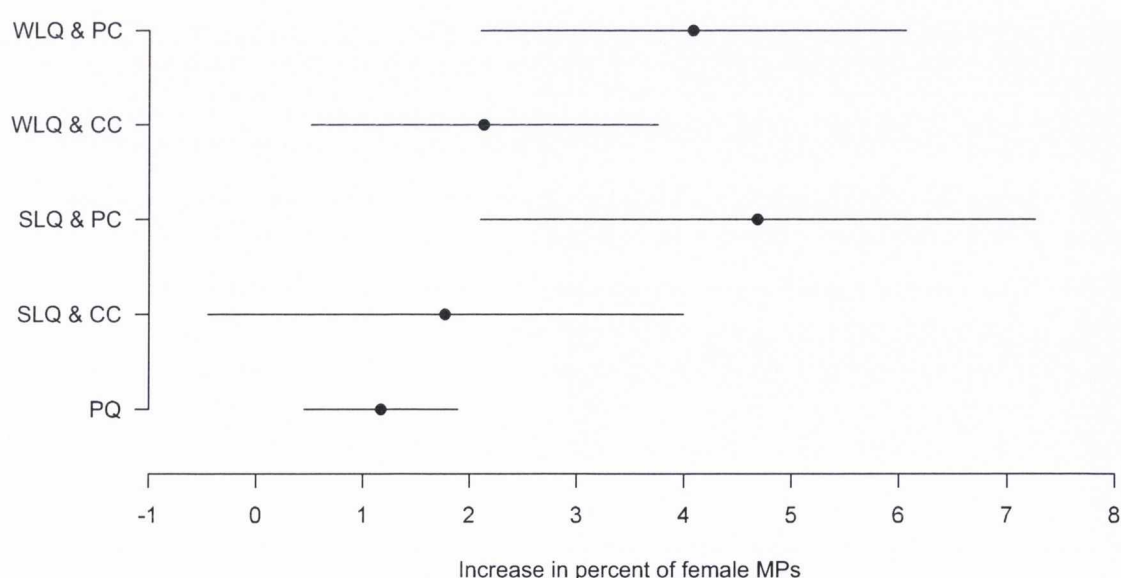


FIGURE 3. The marginal short-run effect of 30% quotas

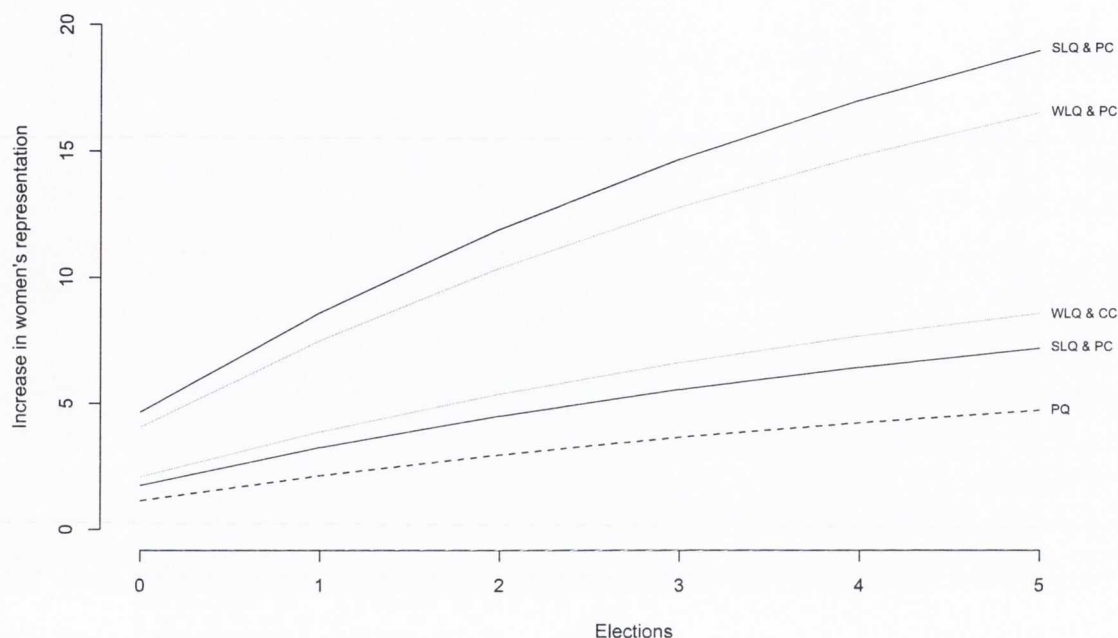


FIGURE 4. The dynamic of effect of 30% quotas on women's representation

The short-run effects of quotas (especially party quotas and legal quotas in candidate centered systems) might seem relatively small. Like many other institutions, the full effect of quotas may appear over multiple elections. Table 2 also shows the long-run multipliers, and their standard errors and significances for the combined model. In the long-run all quotas will substantially increase women's descriptive representation. For legal quotas in party centered systems the long-run effect nearly equals the size of the quota. The long-run effects are halved in candidate centered systems, but for both the weak and strict quotas, the marginal effects are still significant.

Figure 4 shows how the long-run effect of quotas is distributed over elections. (Election "0" refers to the current election and the immediate effect, election "1" to the first future election, etc). We can see how the effectiveness of quotas differs depending on whether the system is party or candidate centered, but also that weak and strict legal quotas can be just as effective in both cases. For all quotas, most of their long-run effect is felt five elections after implementation and after that the effect starts tapering off.

The other covariates have the expected effects in all models. Higher district magnitudes (DM) increase women's representation both in the short and long-run. Because the variable is logged the effect cannot be easily interpreted and the paper will later provide a visual illustration of the effect. We can also see that the increase in the effective number of parliamentary parties (ENPP) will, *ceteris paribus*, decrease women's

representation. This supports the idea that factionalized party systems may not be helpful for women's election. The size of effect is however very small, an increase in one party would only reduce representation by 0.2% in the short and 1.3% in the long-run (base on the combined model).⁸

Overall the models have a good explanatory power, which is often the case when the lagged dependent variable is included. The tables also show the Breusch-Godfrey test of serial correlation – none of the models have any serial correlation in the residuals. The appendix (page 93) also shows the heteroscedasticity robust standard errors and a random effects model (REM) of the combined effect. The models presented above do not account for possible unit heterogeneity, which the random effects account for. However, the estimation of a REM with a lagged dependent variable may be biased (Angrist and Pischke, 2011) and thus I've chosen to present these in the appendix, rather than in the main text. Fortunately, the results do not change when using the robust standard errors or including random effects. This is good evidence of the robustness of the results.

5.5. District magnitudes and culture

The previous section was interested in how the effect of one institution (quotas) depends on another (personal vote incentives). The data analysis showed that the effectiveness of quotas is, indeed conditional on personal vote incentives. This section is interested in whether the effect of district magnitudes is conditional on culture (i.e. public attitudes). Testing for this empirically is complicated by having to measure culture. Many previous studies have used religion and/or region as indicators for culture. A few have also used survey data to gauge public attitudes on gender related questions (Inglehart and Norris, 2003; Paxton and Kunovich, 2003). Here I follow the latter approach and use the agreement with the statement "Men make better leaders" as an indicator for values. I chose this question because it has been asked in the World Values Survey, the Latinobarómetro, the Eurobarometer and also in the Gallup International poll of 1999.⁹ The frequent use of the questions allows us to cover a wider sample of countries and even provides for some comparison across time.

⁸The more developed countries have, all else equal, fewer female representatives and in the short-run the highest developed countries have 5.8% fewer women and this effect is statistically significant. However, all the marginal long-run effects of development are insignificant, meaning that development has no independent long term effect on women's representation. The effect of female employment is assumed to depend on development. In countries of low, medium low and medium high development female employment has no short-run effect. The marginal long-run effect of employment is a very small, but significant in the medium developed countries. Female employment has a sizable effect in the highest developed countries, where a 10% increase in the variable would improve female representation by 1.3% in the short and almost 8% in the long-run.

⁹The Afrobarometer asks the question in a substantially different way and thus cannot be used here. For this reason most African democracies were excluded from these models. Ghana, Mali and South Africa could be included as they were covered in the WVS.

TABLE 3. Culture and the effect of district magnitude, 2000 and 2005

	2000						2005					
	No Interaction			Interaction			No Interaction			Interaction		
	β	SE		β	SE		β	SE		β	SE	
Intercept	100.750	32.845	***	67.414	31.715	**	115.873	48.007	**	90.760	48.719	*
Log(DM)	3.196	0.906	***	6.331	1.610	***	2.215	1.057	**	4.882	2.064	**
Men better leaders	-0.333	0.095	***	-0.087	0.123		-0.358	0.095	***	-0.187	0.147	
Log(DM)*Men better				-0.094	0.038	**				-0.087	0.051	*
Candidate centered	-4.612	2.482	*	-2.154	2.558		-3.308	3.032		-4.028	3.431	
Legal Quota	0.135	0.085		0.445	0.145	***	0.193	0.089	**	0.241	0.142	*
Legal Q*Candidate				-0.363	0.158	**				-0.091	0.161	
Controls: Party Quota	0.148	0.058	**	0.130	0.053	**	0.100	0.067		0.061	0.069	
ENPP	0.187	0.750		0.081	0.684		-0.760	0.849		-0.717	0.854	
Employment	-0.872	0.414	**	-0.699	0.380	*	-0.921	0.593	**	-0.746	0.585	
Log(GDP)	-10.977	3.798	***	-8.616	3.557	**	-12.368	5.741		-9.953	5.741	*
Employ*log(GDP)	0.131	0.049	***	0.115	0.045	**	0.142	0.070	**	0.121	0.069	*
N		56			56			48			48	
R ²		0.636			0.714			0.585			0.612	
F-test				5.974	0.005	***				1.216	0.308	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$
Note: The F -statistic is followed by the p -value.

In these cross section models we can use per capita GDP as a measure of development because spurious regression due to non-stationary data is not an issue. The GDP also uses up less degrees of freedom than the four category variable, and, with only 56 countries available, this is important. To estimate fewer coefficients I have also collapsed the two types of legal quotas into one measure of legal quota size and used the binary aggregate measure for personal vote incentives. As we saw from previous models, both strict and weak legal quotas have a similar effect on representation and thus collapsing them into one category should not affect the conclusions. The other variables are coded as before.

Table 3 shows the results of the cross-section regressions for 2000 and 2005. For both cross-sections the table first shows the models without, and then with the interacting effects of institutions. While the focus here is on how culture mediates the effect of electoral systems, I’ve also included the interaction between quotas and personal vote incentives. The explanatory power is noticeably increased when including the two interactions and for the year 2000 the F -test shows that the increase is also statistically significant.¹⁰ The models performs better for the year 2000, but we also have more cases available for that year. The cases are more limited for 2005 due to the lack of survey data.

As expected, countries with higher district magnitudes also have more female representatives and this effects is evident in all models. The size of the coefficient, however, is very much dependent on the dominant values of a country. Including the interaction term between district magnitudes and the percent agreeing with “men make better

¹⁰Including the two interactions one at a time will still significantly increase model fit. In other words, both are important in improving the model fit on their own.

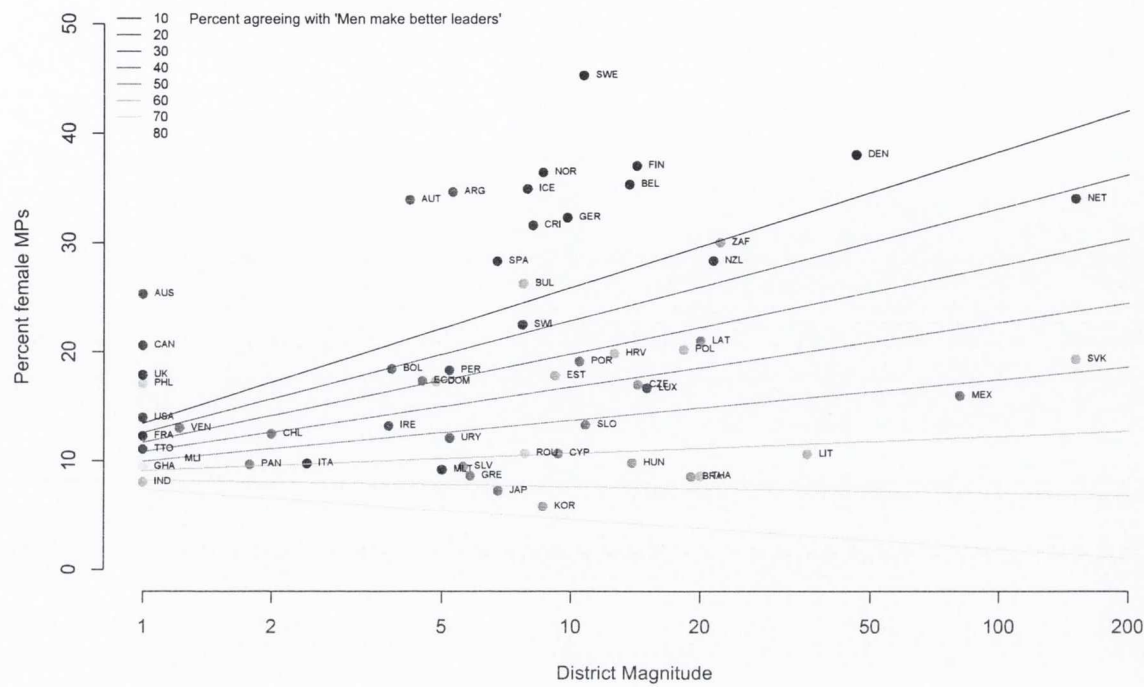


FIGURE 5. The effect of district magnitude conditional on public attitudes, 2000 *Note:* The x-axis is logged.

leaders” doubles the coefficient on district magnitudes in both years. The interaction itself is also significant and negative – the more people agree with the statement, the smaller effect of district magnitudes on female representation.

Interpreting interaction terms between two numeric variables, especially when one is logged, is somewhat complicated. For that reason Figure 5 shows the predicted effect of district magnitude on women’s representation for various agreement levels with the statement “Men make better leaders”. (Note that the x-axis is logged.) Agreement with the statement is color-coded so that when fewer people agree with it, the points and lines are darker (egalitarian values dominate), and when more people agree, the markings are lighter (traditional values dominate). The other variables are kept at the medians – the country has a candidate centered system and no quotas, female employment is 78% of men’s, there are 3.4 parliamentary parties and the GDP per capita is 7076 US dollars.

The figure also shows the actual data points. Note that the lines do not predict any specific country and for this reason we do not expect the lines to fall exactly on the points. What we should see is a general agreement of the data with the predictions – given the same district magnitude, the countries with fewer people agreeing with the statement should have more women in parliaments than countries with more people agreeing with the statement. The picture confirms these expectations.

When the percent of people agreeing with “Men make better leaders” is approximately 60 then, according to the model, district magnitudes have no effect on women’s representation. Surprising, but not impossible, is the prediction that, when the percent agreeing with the statement is over 70, countries with high district magnitudes have fewer female MPs. This may suggest that, in traditional societies, when voters are presented with a female candidate in a SMD, they vote for this candidate in order not to vote for the other party. However, when voters are presented with both female and male candidates in a PR system, they choose the male candidate over the female because they strongly believe that men make better leaders. This explanation assumes that voters’ preference for the party is stronger than that for the representatives’ gender.

Interestingly, the cross-section models also show that when one accounted for the interaction between district magnitudes and attitudes, the latter had no independent effect on representation. This suggests that, just like personal vote incentives, culture is mainly an intervening variable, modifying the effect institutions have on women’s representation. But because the size of the cross-section study is small, this absence of an independent effect of culture cannot be taken as the final verdict.

In terms of the interaction of quotas and personal vote incentives, the cross-section models confirm what we saw in the TSCS models. When we don’t account for the interaction between legal quotas and personal vote incentives the candidate centered countries had on average 4.5% fewer women in the parliaments than party centered systems. When we include the interaction the effect is halved and loses its significance. Instead, we now find that candidate centered systems with a 30% legal quota have approximately 10% fewer female MPs than party centered systems with a similar quota. For 2005 these results are slightly different. As before, personal vote incentives lose significance when including the interaction, but the size of the coefficient is not reduced. Countries with legal quotas have more female representatives, but this time we do not observe a difference in the effect of quotas for party and candidate centered systems. Again, this might be due to the small number of cases we observe.

Of the other variables in the models, countries with party quotas have more female representatives. When the average party quota is 30% the model predicts approximately 4% more female representatives in 2000. The effect is smaller and not statistically significant in 2005. I also tested for the interaction between values and party quota size. I expected party quotas to be less effective in traditional societies. The effect was in the expected direction – party quotas had a smaller effect when more people believed “men make better leaders” –, but the coefficient was not large or significant. It is also likely that in more traditional societies party quotas are just not used.

Employment and per capita GDP have their expected effects in all models. Everything else equal, the most developed countries have fewer female representatives. But at the same time, female employment has a positive effect on representation only in the developed nations (the interaction is positive). The effective number of parliamentary parties has no effect on representation in the cross-section models.

5.6. Conclusions

Research on the effects of electoral institutions on women's descriptive representation is ubiquitous. However, the ways in which the different institutions interact with each other and with other factors has largely escaped scholarly work. This paper has argued that the effect electoral institutions have on women's representation is conditional on other institutions and also on the dominant values of a given society. In other words, electoral institutions do not exist in isolation from each other or other factors. To understand the conditional effects of institutions the paper provided comprehensive theoretical models on how the effect of legal quotas depends on personal vote incentives, and, how the effect of district magnitude depends on values. The paper then tested a restrict set of hypothesis using the democratic elections of 75 countries and found support for each of the proposed interactions.

The paper argues first that the effectiveness of legal quotas should depend on personal vote incentives. Legal quotas should increase women's political representation more effectively in party centered electoral systems that provide few personal vote incentives, e.g. those using closed lists and where voters can only choose between parties. In party centered systems voters cannot reorder the candidate lists and vote female candidates out of office. Legal quotas are less effective in candidate centered systems, because voters can reduce the number and rank of women in electable positions.

The time-series cross-section (TSCS) data strongly supports the idea that legal quotas are more effective in party centered systems. Legal quotas can be expected to be twice as effective in party centered systems compared to candidate centered systems. However, legal quotas in candidate centered systems are not completely ineffective and still significantly increase women's representation. The analysis also showed that the full effect of legal quotas is distributed over multiple elections – the initial effect of a 30% legal quota in a candidate centered systems is actually fairly small, 4-5%, but over subsequent elections this increases, reaching approximately 16% by the 5th election after quota adoption. For party centered systems the effect is halved and five elections after implementation women's representation would have increased about 7%.

The analysis also draws two further conclusions with respect to quotas and personal vote incentives. First, because previous research has emphasized the importance of quota legislation on quota effectiveness the paper measured weak and strict legal quotas

separately. While I expected weak legal quotas to be less effective, the results showed no real substantive difference between weak and strict quotas. Weak legal quotas, those without either enforcement or placement rules, can be just as effective as strict legal quotas. Unlike suggested by previous work, the paper has shown that the effectiveness of legal quotas is determined much more by personal vote incentives rather than quota enforcement or placement.

Secondly, while some authors have argued that personal vote incentives have an independent effect of women's representation, this paper finds no such evidence. Indeed, it appears that these works have suffered from omitted variable bias by not including quotas. Closed lists and voting for parties significantly increase women's representation only when the models do not include any measures for quotas. When quotas are included the independent effect of personal vote incentives is absent. Of course, this does not mean that personal vote incentives are irrelevant – party centered systems still double the effectiveness of legal quotas.

In addition to the conditional effect of quotas on personal vote incentives, I also argued here that the effect of electoral systems depends on the dominating values of a society. High district magnitudes should be most effective in increasing women's representation in cases where few voters have negative attitudes towards female leadership. In those countries parties would be more likely to balance electoral lists and voters would also support female candidacy. But when parties and voters hold very traditional values, female candidacy and election to office is less likely in both PR and SMD systems. This would help explain why large district magnitudes are not associated with high levels of female representation in some regions of the world, e.g. in Eastern Europe, where public attitudes towards women's participation in politics are not very supportive.

The paper found strong evidence for the conditional effect of district magnitudes in a cross-section study of democracies. Countries with high district magnitudes have on average more female representatives, but this effect is substantial only when few people believe men to make better leaders than women. The favorable public attitudes towards female leadership allow the large district magnitudes to have their strongest effect on representation. The effect of district magnitudes diminishes as more voters think that "men make better leaders". When over half the population believes men to make better leaders an increase in district magnitudes has no visible effect on representation. In countries with very traditional attitudes proportional systems are even associated with fewer female MPs than SMD systems.

Some previous work has also suggested that large district magnitudes become less effective when party systems are fragmented because this would reduce party magnitudes. The panel models presented here supported the idea that factionalized party systems

reduce female representation – everything else equal, an increase in the effective number of parliamentary parties decreases women’s political representation. But while the effect was statistically significant, it was substantively small.

In conclusion, this paper has shown that properly accounting for the conditional effects of institutions will lead to substantially different conclusions about the effectiveness of each of the individual institutions. If we exclude quotas from the model, we may conclude that strong personal vote incentives, such as open lists, can reduce women’s representation. However, if we accurately include quotas and also the interaction between quotas and personal vote incentives, our conclusions about these institutions will be quite different. Similarly, the paper has shown that no matter how *potentially* beneficial high district magnitudes can be for increasing diversity in representation, their effect is realized only when there is willingness on the part of parties and voters to balance the party lists.

5.7. Appendix: Diagnostics and robustness checks

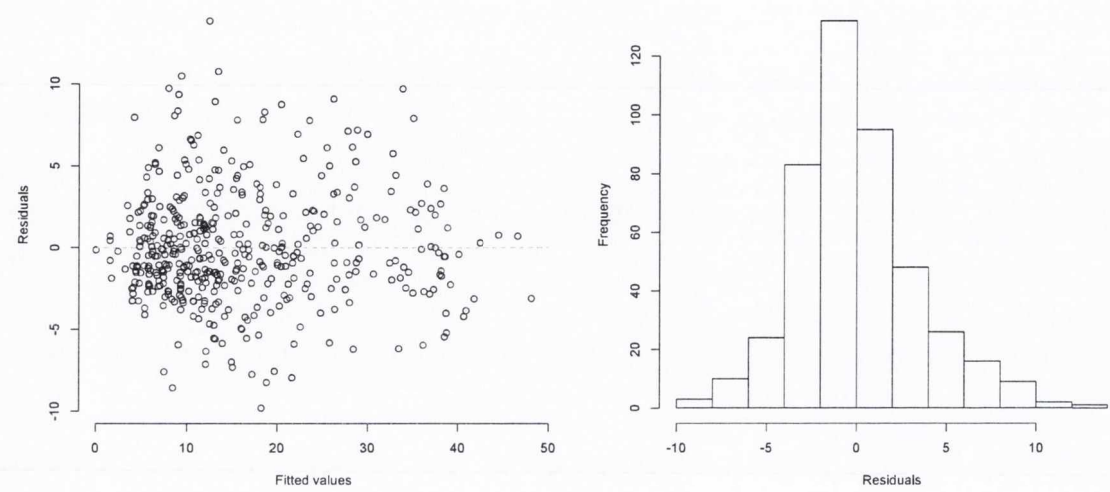


FIGURE 6. Diagnostic plots of the TSCS model with combined personal vote incentives and quotas

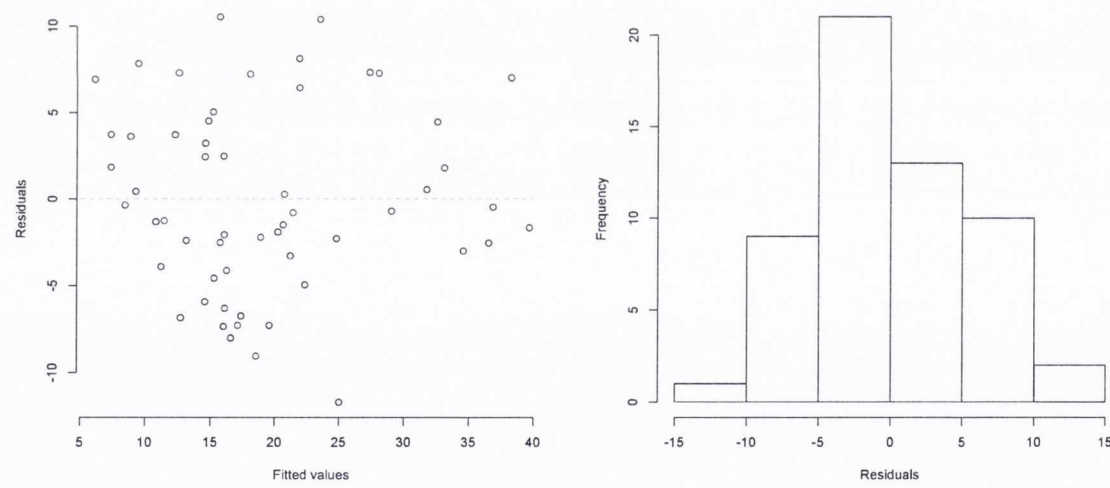


FIGURE 7. Diagnostic plots of the cross-section model with all interactions, 2000

TABLE 4. The effect of personal vote incentives and quotas on women’s representation, robust (Arellano) standard errors and random effects model

	OLS				REM		
	β	SE	Robust SE		β	SE	
Intercept	2.810	1.621	1.526	*	2.938	1.748	*
Female MP _{t-1}	0.839	0.029	0.034	***	0.805	0.031	***
Candidate centered	-0.083	0.508	0.579		-0.014	0.548	
Quotas:							
Party Quota	0.039	0.012	0.012	***	0.043	0.012	***
Weak Legal Quota	0.136	0.033	0.053	**	0.143	0.033	***
WLQ*Cand Cent	-0.065	0.042	0.065		-0.069	0.043	
Strict Legal Quota	0.156	0.043	0.055	***	0.175	0.044	***
SLQ*Cand Cenr	-0.097	0.054	0.058	*	-0.113	0.055	**
Controls:							
log(DM)	0.736	0.166	0.191	***	0.836	0.179	***
ENPP	-0.210	0.115	0.113	*	-0.239	0.121	**
Development:							
Medium Low	-1.238	2.352	2.352		-1.379	2.534	
Medium High	-2.720	2.127	2.020		-3.262	2.292	
High	-8.627	3.285	3.152	***	-10.319	3.499	**
Female Employment:							
Employment	-0.004	0.022	0.024		-0.003	0.024	
Emp*Med Low	0.017	0.033	0.037		0.020	0.036	
Emp*Med High	0.041	0.030	0.031		0.049	0.033	
Emp*High	0.129	0.043	0.044	***	0.154	0.046	***
N		449				449	
R ²		0.893				0.876	
Adj. R ²		0.889				0.843	
BG tets	0.620	0.431			1.858	0.173	

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

Note: The F -statistic is followed by the p -value.

CHAPTER 6

Electoral lists, turnover and women's representation in Estonia

ABSTRACT. Most empirical work on women's representation in national parliaments is at the country level as lower level data is not always available. However, the theoretical mechanisms tested are often stated at the party or individual level. The paper shows that reexamining these mechanisms using new individual level data adds important qualifications to these theories. I find that open lists do not decrease female candidates' election chances and closed lists and turnover do not necessarily improve women's parliamentary representation. The sign of the effect is conditional on specific parties and whether they support female candidates. Turnover and closed lists have a negative effect on women's representation when the election winners are right-wing parties which have fewer women among top candidates.

6.1. Introduction

Previous research on women's representation has largely tested theories using country level data, even though the some of the causal mechanisms work at the party or the individual level. For example, some have found that closed lists and women's representation correlate positively at the macro level, but the mechanism itself is stated at the micro level – closed lists improve representation because parties can place female candidates in electable positions and voters cannot disturb this ranking. Because candidate data is difficult to obtain, the reasons for macro level testing can be understood. But as better data becomes available, these theories should be retested at the level of the actual mechanism. The objective of this paper is to reassess the accuracy of the theories on closed lists and turnover at the individual level, i.e. at the level of the actual causal mechanism.

The paper uses data from six parliamentary elections of Estonia between 1992 and 2011. The Estonian case is quite insightful for many reasons. First, during the 20-year span the electoral system has largely remained unchanged and combines both closed and open lists simultaneously. This makes the data unique and allows testing the effect list types have on women's election while holding everything pertaining to each election constant. Secondly, the availability of detailed party and candidate data permits the testing of the theories at the level of the mechanism, rather than observing a relationship at the country level. Further, previous research on individual level data

has focused on candidate centered systems – mainly single member districts (SMD), but also single transferable vote (STV) – and analyzed only a single point in time. The Estonian data provide the opportunity to test the effect of gender on votes, election chances and list position in a party centered proportional system over a long period of time.

The paper proceeds with the review of the literature, with the focus on district magnitudes, list type, turnover and party ideology, followed by a description of the Estonian electoral system and general trends in women's representation. The paper then turns to testing its main arguments. In the first empirical section I analyze the effect of gender on votes and find that women are associated with fewer votes at some elections. However, a closer examination shows that the gender gap in votes is driven by a large group of weak candidates, and among those candidates who stand a chance for office women do not receive fewer votes than men. For this reason the second empirical section also finds that gender has no effect on election probability from an open list. These two pieces of evidence suggest that there is not consistent voter bias against female candidates. Interestingly, in the third empirical section of this paper finds that women are associated with lower places on closed national lists, suggesting a party bias against female candidates. Thus, unlike the previous macro level research, this paper suggests that closed lists are not necessarily beneficial for women's elections and open lists not necessarily bad.

6.2. Electoral systems, turnover, parties and women

Researchers have for decades observed a positive association between PR systems with high district magnitudes and women's percent among representatives (Duverger, 1955; Rule, 1987, 1994; Taagepera and Shugart, 1989; Matland, 1998; McAllister and Studlar, 2002; Salmond, 2006; Paxton, Hughes and Painter, 2010). Low district magnitudes usually mean that a party receives only one seat per district. These seats go to the frontrunners who, more often than not, are male. High district magnitudes are likely to increase the number of seats a party receives in a district and advance women's representation because the second and third positions in party lists are often also captured by women. Thus, the more seats a party wins in a district, the more likely will there be women among the delegates.

As Matland (1993) and Darcy, Welch and Clark (1994, 151) have pointed out, the real effect of the PR systems then comes down to party magnitudes (the number of seats per party in a district) and not district magnitudes. High district and party magnitudes do not always coincide – countries with large district magnitudes and a high number of parties will likely have small party magnitudes. In such cases the theory should not hold as parties can expect to gain only one seat. The effect is best shown in

Matland's (1993) case study of Norway. The paper is significant because it shows that testing a theory at the level of the causal mechanism adds important qualifications that broaden the scope of the theory and explain away previous anomalies. Namely, this can explain why many scholars have not found a positive effect of PR systems in new or less developed democracies (e.g. see Matland, 1998; Moser, 2001; Thames and Williams, 2010), where the party systems are not consolidated and often overcrowded with many small parties.

Others have argued that PR systems increase women's representation because they are less candidate centered, emphasizing party representation and reducing personal vote incentives (e.g. though closed lists) (Rule, 1987; Kenworthy and Malami, 1999; Thames and Williams, 2010; Valdini, 2012). If voters were biased against female candidates, then this effect can be diminished in the PR system where women are included on party lists *among* men to broaden the general appeal of the ticket, while at the same time the party does not have to risk running a female candidate *instead* of a male candidate. This should increase the supply and also the demand of female candidates in party centered PR systems over the SMD or the candidate centered STV and SNTV. The empirical evidence is, however, not wholly convincing. Many scholars have found no support for a positive relationship between closed lists and women's representation (e.g. Schwindt-Bayer, 2009; Schmidt, 2009).

The above mechanism also makes a number of implicit assumptions that are not well supported. First, it is assumed that parties support women's candidacy and representation more than voters, something there is little evidence of. Admittedly, some research on STV systems suggests a voters biased against women (Schwindt-Bayer, Malecki and Crisp, 2010; Ortega Villodres, 2008), but the effects are small and conditional on other factors (e.g. party size). These results are also contested by other scholars who have found gender to have no effect on election probability or votes (Kunovich, 2012; McElroy and Marsh, 2010; Black and Erickson, 2003; Norris and Lovenduski, 1995). Notably, the few studies that have investigated *party* gender biases find women to hold lower positions on party lists, suggesting that parties do not support women (Esteve-Volart and Bagues, 2012; Tavits, 2010; Kunovich, 2003).

Secondly, the notion that closed lists improve women's representation also assumes that all parties support women's representation to the same extent. This contradicts party level research that finds that party ideology influences the number of female candidates nominated and elected. Studies have found some evidence of left-wing parties being associated with higher levels of women among party MPs (Caul, 1999; Holmsten, Moser and Slosar, 2010). Left parties also have more women among the higher ranks of the party, which this in turn can affect the percent of female candidates a party nominates and/or the percent of female party MPs (Cheng and Tavits, 2011; Kunovich and Paxton, 2005; Kittilson, 2006, 124). While some have claimed that the

differences between the left and right parties have disappeared (Kittilson, 2006), the data show that this is not the case in Estonia.

It is also claimed that legislative turnover affects women's representation (Matland, 1993; Darcy, Welch and Clark, 1994; Schwindt-Bayer, 2005). Incumbency has a very strong positive effect on reelection, but because most incumbents are male, lower turnover will disadvantage women and perpetuate the gender gap. However, relying again on party level research, the effect of turnover should be conditional on party type. Gains made by a right-wing party should not increase the number of female representatives while turnover that increases the representation of the left should support women's representation.

The juxtaposition of work on women's representation done at different levels of analysis brings to light inconsistencies, and we have to reexamine the mechanisms of the effect of closed lists and turnover on women's representation in light of the party level research. Closed lists should benefit women only if parties decide to include more women in top positions. And while turnover can affect women's representation, the sign of the effect should depend on the parties – turnover should have a negative effect if parties that have fewer women among candidates increase in representation. Ultimately, the effect is not driven by any specific list type or turnover in general, but by parties.

Using candidate and party level data from six Estonian elections the paper shows that the described improvements to the theory are necessary. The data analysis shows that, compared to men, female candidates are not consistently associated with fewer votes or low election probabilities from open lists. Women were associated with lower election chances only in 2003, when an unusually high turnover increased the representation of a right-wing party. The paper also finds little evidence of the benefits of closed list. Contrary to what has been believed, parties do not always place women in electable positions on closed lists.

6.3. Women and elections in Estonia

The 101 members of the Estonian parliament are elected through a proportional system that combines closed and open lists. The system has largely remained unchanged over the six elections. The country is divided into 12 districts (11 in 1995 and 1999) and the number of mandates available in a district corresponds to their size.¹ Parties present separate candidate lists for each district (open lists) and one single national list containing all candidates (closed). These lists are not alphabetical, but ordered in accordance to the preferences of the parties and their leadership.

¹The average district magnitude is between eight and nine, the smallest five, and the largest 14.

TABLE 1. Female candidates and representatives by list type and overall retention rates, 1992-2011

	1992		1995		1999		2003		2007		2011	
	N	%	N	%	N	%	N	%	N	%	N	%
Elected	13	12.9	12	11.9	18	17.8	19	18.9	24	23.8	20	19.8
Open	3	7.3	3	6.1	9	16.4	11	14.9	17	22.7	18	22
Closed	10	16.7	9	17.3	9	19.6	8	29.6	7	26.9	2	10.5
Candidates	88	14.0	218	17.7	508	27.0	206	21.4	264	27.1	178	22.6
Retention			51	50.5	53	52.5	39	38.6	68	67.3	67	66.3

Source: Data on retention rates from Möttus (2011)

Voters choose among the candidates in the district lists and the candidates will be reordered based on the number of votes they receive. A candidate receiving votes higher or equal to the quota of his or her district is elected by the *personal mandate*. Votes for the candidates of each party are then pooled at the district level and parties receive a number of mandates equal to quotas. As of 2003 a party is added a mandate if the remainder of votes is at least 75% of the quota. The *district mandate* will then be given to candidates who rank highest in their party after the votes are tallied. If a party received two mandates in a district, the two candidates receiving the most votes in that party will be elected to the parliament from that district.

Other than the 75% of quota rule the remainders do not count towards receiving a district mandate. This procedure usually leaves some of the district mandates undistributed. These undistributed mandates are pooled nationally, determining the total number of *compensatory mandates*. Compensatory mandates are distributed between parties based on the remainders. The candidates that receive the compensatory mandate are determined by their place in the closed national lists. The mandate is given to candidates further up in the national list even if they received fewer votes in the district than someone further down the district list.²

Table 1 shows the percent of female candidates and elected representatives over the six elections. The first democratic elections were associated with poor political representation of women. This is something that has been common to all post-communist countries (Matland and Montgomery, 2003). While women were involved in the process of democratization in Easter Europe, they did not do so as women or feminists. Initially many women actually expressed the desire not to participate in the workforce or

²The number of candidates elected under each type of list is not predetermined. Rather this depends on the number and strength of parties in a districts. If there are many competitive parties votes will be divided between them, lowering the chances of each individual party receiving a district mandate. This was the case in the first elections, later the number of competitive parties decreased and more mandates were distributed at the district level. Also, smaller parties usually fail to receive many district mandates and thus get a disproportionally high share of compensatory seats. Larger parties fill the quotas more frequently, getting a high share of district seats and a disproportionally low number of compensatory mandates.

in politics. Issues of gender equality were associated with the discredited Communist regime and the initial rejection of feminism and egalitarian goals was, to a large extent, a rejection of communism (Jaquette and Wolchik, 1998).

Survey results confirm the explicit rejection of women's participation in politics. In mid 1990's nearly 80% of men and about 60% of women in Estonia believed that "men make better political leaders" (Wilcox, Stark and Thomas, 2003, 45). But in the following years attitudes changed quite rapidly. A survey asking a similar question in 2005 found the respective percentages to be 53 and 34 (Dreman et al., 2006, 19), showing marked decrease in just 10 years. Similarly, in 2005 only 19% of men and 40% of women believed that there should be more women representatives in the Estonian parliament and just four years later these percentages were 32 and 49 (Vainu, Järviste and Biin, 2010, 137). So, today, the majority of Estonians appear to be more willing to vote for female candidates.

The dynamics in public attitudes is consistent with women's electoral success in the open lists. As Table 1 shows, the proportion of women elected to parliament through closed lists is generally higher. But the percent of women elected through the open lists has increased together with more favorable attitudes towards female leadership. These dynamics can also be explained by changes in party magnitudes. Party magnitudes were initially quite high in the closed national tier, but small in the districts. Over the years the party magnitudes in districts increased, but fell at the national tier.

In order to better test the causal mechanisms on the relationship between open lists and women's representation the paper will ask whether women receive less votes or are disadvantaged in getting seats from open lists. If open lists have a negative effect on women's representation due to voter bias we would find female candidates to be associated with fewer votes and lower election probability from the district open lists. We might also expect a stronger effect of gender on votes and election probability at the earlier elections, during which public attitudes towards female leadership were more negative. To study the effect of closed lists I test whether women are placed at electable positions on the national lists. Closed lists would benefit women if we found a positive association between female candidates and higher placement on national lists.

Finally, Table 1 also shows that changes in women's representation do not correspond to changes in retention rates. Notably, at the high turnover election of 2003 the percent of female MPs rose only by a percent. This was followed by an election with very low turnover but a much higher increase in female legislators. To investigate the relationship between turnover and women's representation the paper takes a closer look at the election of 2003.

TABLE 2. Average votes by gender and women's vote as a percent of men's

Election year	1992	1995	1999	2003	2007	2011
Average vote for male candidates	743.40	474.80	289.31	533.40	604.50	751.60
Average vote for female candidates	637.13	219.50	169.58	442.23	456.20	651.00
Women's vote % of men's	85.70	46.23	58.62	82.91	75.47	86.62
Women's vote % of men's (without extremes)	89.30	52.82	62.52	87.67	83.10	97.37

6.4. Gender and votes

If open lists disadvantage women, we should expect female candidates to receive fewer votes. Indeed, some research on Estonia has pointed to the large gap in the average votes received by men and women (Raitviir, 2000, 2002). The author claims that gender is an important factor in Estonian politics because voters are less likely to give their vote to a female candidate. Table 2 lends some credence to this – on average, women have received fewer votes at all elections. The gap is especially large in 1995 and 1999 when female candidates received only about 50-60% of men's vote. The gender vote gap is smallest in 2011, when women received as many votes as men. The difference in votes is also much smaller when excluding a few highly successful male candidates.³

To provide more insight into the distribution of votes, Figure 1 shows the density plots of votes for men and women in 1999 and 2011. We can see that the difference in means in 1999 was driven by a large group of female candidates whose vote share in the district was below 5% of the district quota (200-300 votes) and who were thus ineligible for office according to election law. Among this group of candidates women received on average only 83% of men's vote. The distinctions in the proportion of men and women in higher vote groups (beyond 300 votes) are much smaller. Among candidates receiving more than 5% of the quota women won, on average, 93% of men's vote. In 2011 the lines overlap, meaning that there are proportionally as many women as men in each vote group. Women received about 98% of men's vote in both vote groups.

These data suggest that rather than consistently performing worse, women do particularly poorly at some elections and not at others. The gender vote gap also appears to be particularly high among the weakest candidates. Obviously, this evidence is not sufficient to determine the effect of gender on votes, because other personal and/or party characteristics such as incumbency or popularity of the party also influence voters. Variables such as placement in district and national lists, incumbency, age and

³I defined highly successful candidates as those receiving more than 10 000 votes. 10 000 seemed like a natural cut-off as a many candidates still received votes in thousands, but few have ever obtained near to 10 000 votes or more. In 1992 one, in 1995 five, from 1999 to 2007 two and in 2011 three candidates were excluded as highly successful. All these were male.

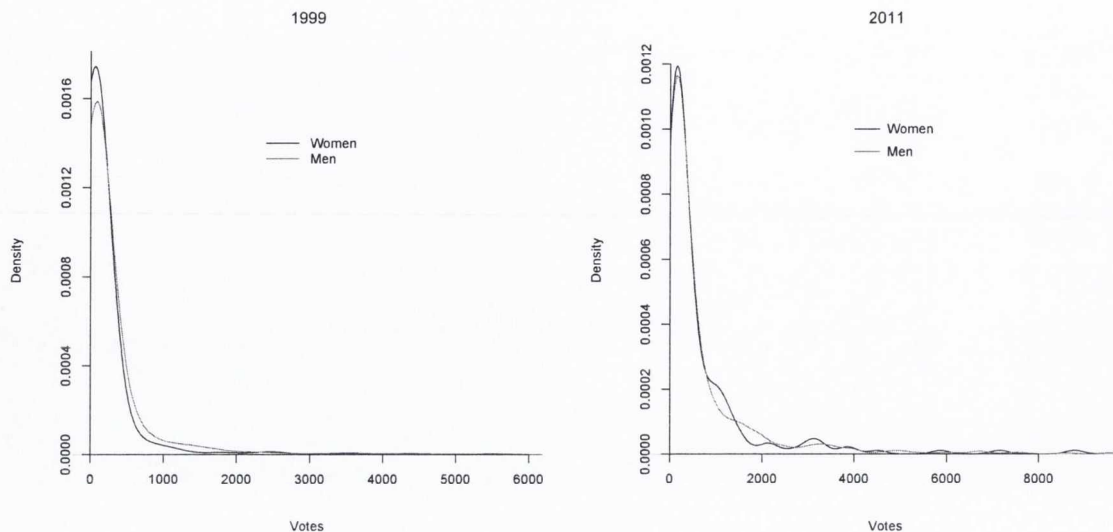


FIGURE 1. Distribution of votes by gender, 1999 and 2011

some indication of party success should be controlled for.⁴ Secondly, electoral districts vary in their size, affecting the number of votes a candidate can receive. Because of this I have used candidates share of district votes. For an OLS analysis the shares are still an inappropriate dependent variable because they are bound at 0 and 1, and also because most observations are clustered close to zero. A logit transformation of these shares solves both problems.⁵ The dependent variable then becomes:

$$dv = \log \left(\frac{\frac{v_i}{V_d}}{1 - \frac{v_i}{V_d}} \right),$$

where v_i denotes the number of votes for any candidate i and V_d is the number of valid votes in district d .

Table 3 shows the results of an OLS regression using the above dependent variable. Overall, these results are consistent with the data presented previously. Female candidates won fewer votes in five of the six elections, but the coefficient is large and significant only in three. The effect is strongest in 1999 and 2007, but noticeable also at the 1995 elections. In 2003 the coefficient is small and the effect falls below conventional significance levels. It is safe to say that in 2011 gender had no impact on

⁴Level of education was also available for elections of 1999-2011, but has been excluded from the study because of lack in variation. About 80% of both male and female candidates had a higher education. Including education in the models had negligible effect on the other coefficients. Because of the relationship between age and education, adding the dummy "higher education" decreased the coefficient on age.

⁵The use of this transformation is problematic when a candidate receives no votes. With zero votes the log becomes minus infinity – an extreme value that may skew the regression results. To avoid the problem, candidates with no votes are assigned one vote. Over the six elections there are five such candidates, one in 1992 and four in 1999.

candidates votes – the coefficient is very small and the standard errors are large. Interestingly, women are, all else equal, associated with more votes at the first elections in 1992, that is, when public attitudes were most negative towards female leadership. It may be that in 1992 many potential female candidates did not even consider running. Those that did run were then exceptionally strong candidates. In other words, women “weeded themselves out” by never entering the arena (Fox and Lawless, 2004, 2011).

The models also control for list positions. While voting, people are presented with district lists of each party. As mentioned, the lists are not alphabetical but rather represent the ranking of candidates by the parties. As some research suggests (Lutz, 2010; Ortega Villodres, 2008), voters are often influenced by this order and prefer higher ranked candidates. Thus we expect lower ranked candidates to receive fewer votes. National lists are not presented at the polling booth, but these lists are public and available to the voters any time before the election. It is difficult to say whether these lists provide cues to the same extent as district lists may. However, national lists can be taken as a measure of candidate quality, or more precisely, the parties’ assessment of candidate quality. Thus, higher placed candidates could be considered better quality and should receive more votes.

The results of Table 3 confirm the expectations – ranking lower on the district list is associated with fewer votes. The sizes of coefficients vary across elections, but are roughly of the same magnitude. It is hard to make conclusive statements on the causality of the effect however. Parties can and often do place popular candidates at the top of the list, thus popularity influences list position. On the other hand voters may take cues from list placement and are more likely to support a higher ranked candidate. There is likely a two-way causality, a reinforcing cycle by which higher ranked candidates receive more votes. Regardless, district list placement is an important control that has to be included in the model.

Also quite expectedly incumbency appears as a significant factor in increasing votes in all six models.⁶ Again there is some variation in the size of the coefficient. The effect being smallest in 2003, when the elections resulted in an exceptionally high turnover.

Age is an interesting control variable, losing its significance over the years. In the first three elections an increase in age is associated with more votes, but the size of

⁶Both the members of the parliament and ministers are included among incumbents. From 2007 the MEPs are also counted as incumbents. Because the number of MEPs and ministers is fairly small it makes little sense to create a separate variable for the two categories. The expected effect on the votes and the theory behind it is the same – incumbents are known national politicians with name recognition and large personal support base. The definition of an incumbent is different for the year 1992. Here, members of the Supreme Council of Estonia (elected in 1990 in the first multi-party elections in decades) are considered as incumbents.

TABLE 3. Explaining vote shares, 1992-2011

	1992		1995		1999		2003		2007		2011	
Intercept	-4.926	***	-6.044	***	-6.615	***	-5.537	***	-5.507	***	-5.370	***
	0.203		0.146		0.112		0.141		0.152		0.151	
National list	0.001		-0.001		-0.003	***	-0.005	***	-0.001		-0.005	***
	0.002		0.001		0.001		0.001		0.001		0.001	
District list	-0.290	***	-0.202	***	-0.089	***	-0.161	***	-0.191	***	-0.184	***
	0.024		0.014		0.005		0.013		0.012		0.014	
Age	0.008	**	0.006	**	0.008	***	0.002		-0.001		0.003	
	0.004		0.003		0.002		0.003		0.003		0.003	
Incumbent	0.869	***	1.061	***	1.513	***	0.665	***	0.843	***	0.768	***
	0.161		0.133		0.128		0.105		0.120		0.112	
Female	0.250	**	-0.164	*	-0.203	***	-0.111		-0.215	***	-0.057	
	0.120		0.084		0.056		0.072		0.073		0.080	
Party popularity	5.732	***	7.981	***	8.894	***	9.324	***	8.440	***	7.576	***
	0.532		0.321		0.318		0.296		0.316		0.313	
N	629		1251		1884		963		975		789	
R ²	0.412		0.467		0.496		0.607		0.585		0.615	

****p* < 0.01; ***p* < 0.05; **p* < 0.1
Note: Standard errors are shown below coefficients.

the coefficient drops markedly between 1999 and 2003 and falls below conventional significance levels. This could also be related to the high turnover that occurred in 2003 when many new people entered politics.

To capture party effects the model uses the share of party votes in the district of the candidate.⁷ The table shows that the party's popularity in a district is strongly associated with candidate's votes and the size of the effect changes little over the years. Overall, the most consistent predictors of candidate's votes are district list position, incumbency and popularity of the district party.

The model fit is weaker for the first three elections (the covariates used explain only about a half of the variation for those years), but improves visibly for 2003-2011. This dynamic could be explained by the consolidation of the party system and democracy, which have made elections more predictable through the conventional variables. Major parties and popular candidates have emerged and people have a clearer idea of what each of them represents. This is especially so as much of the explanatory power can be attributed to the popularity of the candidate's party.

I tested the robustness of the model results by running the same models using, firstly, district random effects and, secondly, party random effects. The party and district random effects allow us to account for the unobserved party or district differences. The district random effects had a negligible effect on the results. The party random effects affected the size of some coefficients. In particular, the coefficient on the district

⁷Another option would have been to use party fixed effects, but because parties' popularity may vary across districts, the district based measure used here is preferable.

party popularity was reduced, but was still significant. The inclusion of random effects did not, however, change the main conclusions. (The results with party random effects are presented in the appendix, page 118.)

Because the dependent variable is transformed, the coefficients are not easily interpreted. For this reason it is better to present some examples of the effects in figures. To show what drives the effect of gender on votes, Figure 2 presents the predicted votes for hypothetical good and weak candidates of both genders by district list placement in 1999 and 2011 respectively. A good candidate is defined as someone of average age, placed 10th on the national list, incumbent and from a party that has received 25% of district vote. A weak candidate is someone of average age, placed 40th on the national list, not an incumbent and from a party that has received 15% of district vote.

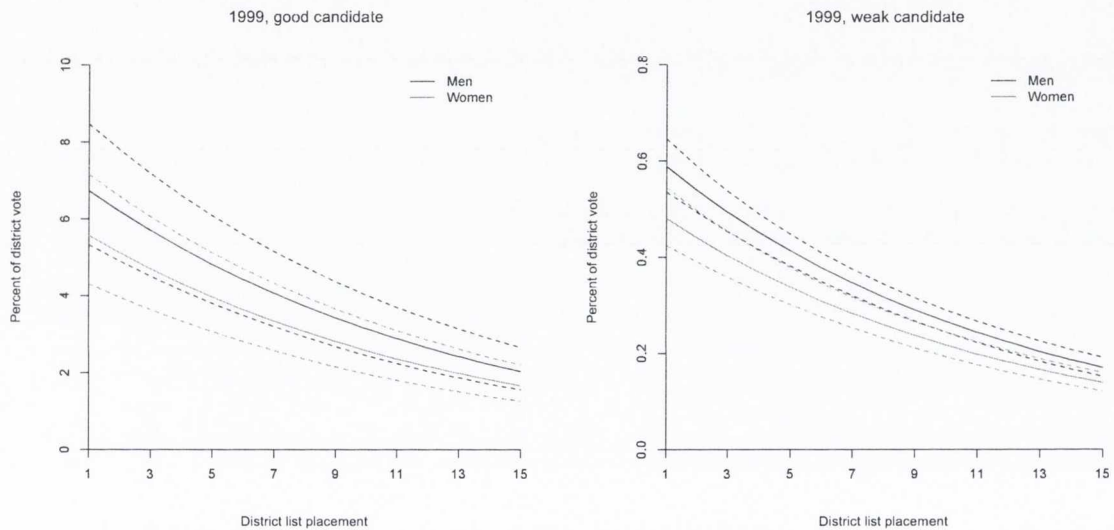


FIGURE 2. Predicted vote shares for good and weak candidates by gender, 1999

Figure 2 for the 1999 elections shows that good male and female candidates can expect to receive 6.7 and 5.5% of district votes respectively. (Dashed lines show 95% confidence intervals.) While the difference in votes is more than one percentage point, the confidence intervals for the two groups overlap and include the mean of the other group. The picture is very different for the weak candidates. The weak male candidates can expect to receive just under 0.6 and female candidates 0.5% of district vote. Though the difference is only about 0.1 percentage points, the confidence intervals do not always overlap. Even when they do, the overlap is much smaller and the confidence intervals never include the mean of the other group. The comparison of the two types of candidates tells us that the statistically significant effect of gender on votes in Table 3 is driven by the large group of weak candidates among which women do much worse than men. Repeating the plots for 1995 and 2007 give similar results.

To provide further support for this, I reran the same regression after splitting the candidates of the 1999 election into two groups based on votes – those who received minimum 10% of the quota, and were thus eligible for a district mandate, and those who received under 10% of the quota. The coefficient on gender was small (-0.008) and insignificant in the former group, but large (-0.187) and significant in the latter.

In contrast to the 1999 elections, in 2011 the differences between genders in predicted votes shares were marginal (approximately 0.2% for the good and 0.05% points for the weak candidates) and the confidence intervals overlapped. There was no difference in the results for the weak candidates – weak female candidates did as well (or as poorly) as weak male candidates. The findings for the 1992 and 2003 elections were similar to that of the 2011 election.

From the regression results we can conclude that there is no clear trend or any consistent effect of gender on votes. Rather, it appears that voter react to the specifics of the election – the popularity of the parties and the candidates they present. The analysis also tells us that the statistically significant effect of gender is driven by a large group of weak candidates among whom women do much worse. However, the difference of 0.5% percentage points in the predicted votes for men and women among the weak candidates is negligible. In other words, the statistically significant difference is not substantively significant. All of these weak candidates, regardless of gender, have little chance of being elected.

The findings have two very important implications. First, if those candidates receiving fewer votes are new and unknown, it may mean that women have a harder time entering the arena than men – when candidates are new or relatively unknown to voters the preference is for the male candidate. But at the same time, once a candidate has reached a certain level of popularity, voters do not seem to care about gender. Other studies have suggested similar patterns. In Canada, women who contest open seats (races with no incumbents) cost the party more in popular vote loss than male candidates at similar races. The gender vote gap is, however, marginal when an incumbent is running for reelection (Young, 2006). Secondly, and more importantly for this research, if the effect of gender on votes is caused by the very poor results of the female candidates who have little hope of election anyway, it will not necessarily translate into an effect of gender on election chances.

6.5. Gender and getting elected

While the previous section found a relationship between gender and votes in three out of the six elections, it was emphasized that this may not be substantively important as it is driven by a large group of very weak candidates who have little to no chance of election. If this is the case, we might find that gender has no impact on election

probability. This section looks at election probability from open lists, testing the hypothesis that, compared to men, women are disadvantaged in getting a seat through open lists.

Table 4 shows the results of a standard logistic regression where the dependent variable is coded one if a candidate is elected from the district (that is through open lists) and zero otherwise. District size is accounted for by including it as an explanatory variable. Using an interaction between gender and district magnitude, we can test whether women have a higher chance of election in larger districts. National list placement is omitted as it cannot have an effect on election from district.⁸

Our variable of interest, being a female candidate, has in general a fairly marginal effect on election from open lists. Female candidates appear to be most disadvantaged in 2003 and 2007, with the size of the coefficient being especially large and statistically significant only in 2003 (in 2007 the effect is just below the conventional significance levels). Women are, according to the models, associated with better chances of election from the districts in 1992, 1995 and 2011, but the standard errors are very large and the effect is far from significant. In 1999 the effect is negative, but very small with large standard errors.

Though the models explaining votes in Table 3 found women candidates to be disadvantaged in 1995, 1999 and 2007, this has not affected their chances of election. The results are expected as the difference in votes was driven by those who had little to no chance of election. While the dependent variable “votes” can distinguish between candidates who receive 10, 100 or a 1000 votes, it makes little difference for the variable “elected from open lists” – none of the candidate had a realistic chance of winning a district seat.

But why do we find such a strong effect of gender in 2003? The question is particularly interesting as we found no effect of gender on votes in 2003. The answer lies in party turnover and the relationship between party ideology and women’s representation. The party that gained most seats in 2003 was Res Publica, a right wing party with fewer women among candidates than other parties. Res Publica had no women at the top of the district lists and had fewer women among the top three of districts than other parliamentary parties. Only the conservative Pro Patria Union, which later merged with Res Publica, had as few women among top candidates. Running the above logit model for 2003 while excluding the Res Publica party reduced the size of the coefficient on gender and the interaction term, and increased both standard errors. As a result neither coefficient was statistically significant. The same model on only Res Publica candidates produced a very large and statistically significant coefficient on gender. The

⁸Models including national list placement were tested, but the results did not differ substantially from those presented in Table 4

TABLE 4. Getting elected from districts (open lists), 1992-2011

	1992		1995		1999		2003		2007		2011	
Intercept	-8.023	***	-8.517	***	-5.853	***	-4.796	***	-1.608		-2.441	**
	1.585		2.041		1.386		1.333		1.214		1.206	
District list	-0.819	***	-0.950	***	-0.795	***	-1.201	***	-0.984	***	-1.425	***
	0.167		0.164		0.126		0.153		0.142		0.192	
Age	0.014		0.050	**	-0.004		0.008		-0.056	***	-0.038	**
	0.020		0.022		0.018		0.017		0.018		0.018	
Incumbent	1.238	**	1.752	***	1.458	***	0.059		1.639	***	0.951	**
	0.496		0.488		0.400		0.405		0.383		0.399	
Female	1.979		2.268		-0.194		-6.646	**	-2.390		0.988	
	2.542		5.702		2.361		2.788		1.810		1.565	
DM	0.339	***	0.266		0.240	**	0.265	**	0.185	*	0.268	***
	0.102		0.176		0.106		0.121		0.109		0.093	
District party	22.816	***	18.002	***	21.238	***	19.884	***	15.533	***	18.772	***
	3.038		2.075		2.654		2.114		1.928		2.351	
DM*F	-0.223		-0.274		0.015		0.691	**	0.284		-0.100	
	0.299		0.626		0.240		0.311		0.197		0.166	
N	629		1251		1884		963		975		789	
AIC	172.70		180.91		234.68		248.92		241.57		219.44	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$
Note: Standard errors are shown below coefficients.

high turnover of 2003 hindered women’s representation because the party that gained the most from this was not supportive of female candidates.

The table also shows that an increase in district magnitude increases the probability of election from open lists for all candidates. This occurs because larger districts are generally less competitive in terms of the candidates per mandate ratio. The size of the effect fluctuates some over years, but is generally of the same degree. In 1995 the standard errors of the effect are slightly larger than in other years and the effect falls just below statistical significance.

Theory expects women’s chances of election to increase more with an increase in district magnitudes, but the empirical results are mixed. First, the sign on the coefficient is positive only in three elections, of which in 1999 its size is very small. But the effect is noticeable in 2007 and especially in 2003, meaning that women’s election probability is higher (relative to men’s) in larger districts. The effect of district magnitudes is visible only at these two elections because women were in general less likely to get elected in those years.

To better understand the effects of gender and district magnitudes the Figure 3 shows the probability of election for men and women in both a big and a small district (the dashed lines showing the 95% confidence intervals). In all cases the candidate is not an incumbent, with average age and the party vote in district is held at 20%, making it fairly popular party. The left-hand panel shows how, in a larger than average district, both male and female candidates have an over 70% chance of election when placed at

the top of district list. The probability of election is above 50% for the second placed, but falls very quickly to only about 10% for the fourth placed. Overall, the predictions for both genders are similar and the confidence intervals overlap completely.

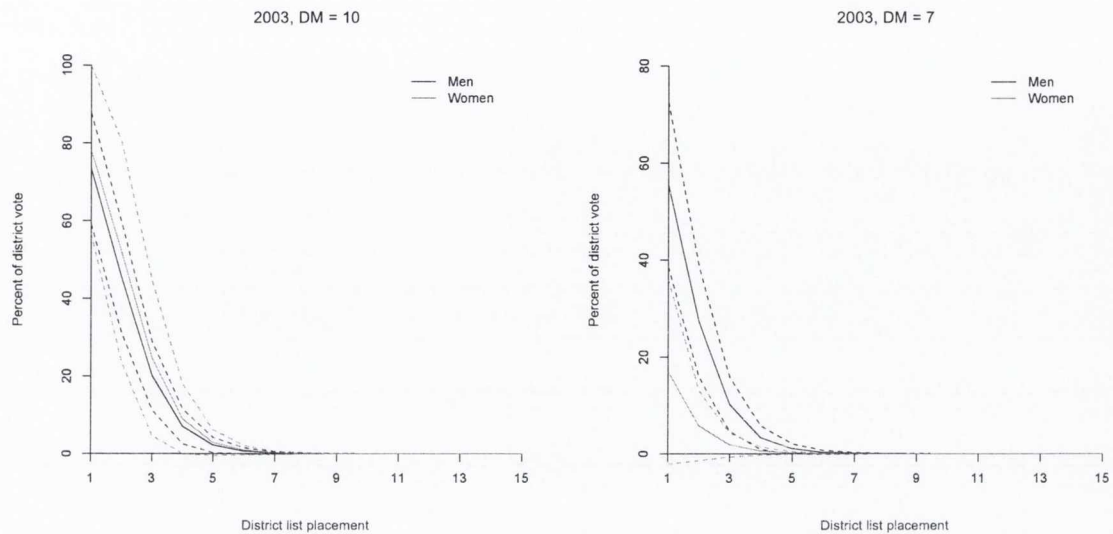


FIGURE 3. Predicted probability of election in big and small districts by gender, 2003

The picture is quite different in the right-hand panel. In a smaller than average district the same female candidate only has about 15% chance of election, while the equivalent male has nearly four times higher election probability. Admittedly the confidence intervals are very large, but do not overlap. In an average district (eight seats) men still have nearly twice the probability of election of women, but the confidence intervals are slightly overlapping. Overall, the two panels together show how district magnitudes can affect the election of women – in a large district the probability of election is not dependent on gender but, women are clearly disadvantaged in the smaller and even in the average sized districts.

Of the other controls, placement in district lists, party support in district and incumbency have a consistent and significant effect on candidate's election chances, just as they did on votes. Incumbency increases a candidate's election probability in all but one election. In 2003 incumbency has a much smaller effect because of the large turnover caused by the very successful entry of the new party *Res Publica*. Their success has largely been attributed to the lack of incumbents among the candidates and the party's newness (e.g. see Taagepera, 2006; Sikk, 2011).

While we previously learned that an increase in a candidate's age increases votes in 1992, 1995 and 1999, the logit regressions in Table 4 show that, before 2007, age has no significant effect on getting elected. These models suggest that the age-related increase in votes does not translate into success in getting elected. An exactly opposite

situation is true for 2007 and 2011. Previous regressions showed age to have no effect on votes during these two elections, but the logit models suggest that being younger is positively associated with candidates election chances. The results may be caused by the surge of new, younger, candidates in the new millennium and the lower than average age among the most popular parties.⁹ Successful parties also attract more new candidates, possibly increasing the age gap further.

Again, I checked the robustness of the results by running random effects models using party and district effects. Neither effects had any impact on the results, and thus they were excluded.

6.6. Gender and placement in national list

Thus far we have found little evidence of a consistent voter bias against female candidates; gender did not have a clear effect on candidate's election chances from open lists. This section explores the potential effect of gender on election from closed lists. The best way to analyze this is to observe the relationship between gender and placement in closed lists. Position on a closed list is the only individual level determinant of election probability, and thus, if gender affects placement, it affects election.

Table 5 presents an overview of the relationship between gender and placement in national lists. The first two columns for each year show the number of men and women at each placement group, the third column shows the ratio of men to women. Highlighted cells show cases where men were disproportionally over-represented compared to the overall ratio of men to women. A pattern emerges over all elections – men are over represented in the top 20-30 positions and also in the bottom 20-30. Thus women are placed in the middle, sometimes among the top 20-30, but most often among places 30-40 and beyond.

Given the small size of the *Riigikogu* and the multiparty system, a place below the 30th rarely matters – few parties ever take over 30 seats and candidates placed lower than 30 has a very small probability of election through national lists. Such a candidate stands a chance only in the district, where the national placement does not matter. The national list can be seen as a means to guarantee the election of candidates the party considers important, but who are not necessarily popular among voters.

Tavits (2010) has analyzed list placement in Estonia in 2003 using OLS and finds gender to be positively related to the national list placement – women are associated with higher order number, i.e. lower placement on the list. Though Tavits finds a statistically significant effect in an expected direction using linear regression, the picture in Table 5 tells us that the relationship is hardly linear across the whole list.

⁹For example, the candidates of the Reform Party, the winning party of 2007 and 2011, were on average two years younger than other candidates.

TABLE 5. Ratio of men and women in national lists, 1992-2011

Placement	1992			1995			1999			2003			2007			2011		
	m	w	ratio	m	w	ratio	m	w	ratio	m	w	ratio	m	w	ratio	m	w	ratio
1-10	156	19	8.21	151	21	7.19	115	24	4.79	102	24	4.25	87	30	2.90	101	21	4.81
11-20	90	16	5.62	134	24	5.58	98	22	4.45	75	19	3.95	69	23	3.00	62	15	4.13
21-30	64	11	5.82	117	29	4.03	89	31	2.87	76	14	5.43	62	28	2.21	41	19	2.16
31-40	42	8	5.25	105	16	6.56	81	35	2.31	65	12	5.42	59	26	2.27	44	16	2.75
41-50	42	7	6.00	95	25	3.80	80	30	2.67	52	18	2.89	58	22	2.64	50	10	5.00
51-60	35	5	7.00	83	20	4.15	85	25	3.40	50	20	2.50	51	22	2.32	47	13	3.62
61-70	35	5	7.00	77	20	3.85	67	25	2.68	57	13	4.38	53	17	3.12	45	15	3.00
71-80	25	8	3.12	65	18	3.61	54	26	2.08	50	20	2.50	49	21	2.33	46	14	3.29
81-90	24	6	4.00	56	24	2.33	58	22	2.64	51	19	2.68	50	20	2.50	44	14	3.14
91-100	24	3	8.00	73	7	10.43	59	21	2.81	51	19	2.68	49	21	2.33	40	10	4.00
101-110	4	0	Inf	33	8	4.12	53	27	1.96	54	12	4.50	55	13	4.23	39	11	3.55
111-120				12	2	6.00	52	28	1.86	49	11	4.45	48	12	4.00	36	14	2.57
121-130				8	2	4.00	54	26	2.08	25	5	5.00	21	9	2.33	16	6	2.67
131-140				9	1	9.00	52	28	1.86									
141-150				9	1	9.00	55	23	2.39									
151-160				10	0	Inf	49	21	2.33									
161-170				1	0	Inf	50	16	3.12									
171 +							225	78	2.88									
Total	6.15			4.76			2.71			3.67			2.69			3.43		

Note: Highlighted cells refer to cases where the number of men was disproportionately high compared to the overall ratio of men in that election year.

A linear relationship can mostly be noted among the top 30 to 40 positions – among the places the matter for elections.

An option would be to drop all cases beyond some reasonable cut-off point (e.g. 30, 35 or 40) from the data set and run the analysis on the smaller subset. In general this may prove a fruitful strategy, but problems may arise when the cut-off point is poorly defined. Consider for example the placements in 2003 in Table 5. Women are underrepresented among the first 40, but the underrepresentation is higher among positions 21-40 than among places 1-20. Thus, analyzing only positions up to 40 without any reference to places 41-60 or beyond we may make a wrong conclusion about the relationship between gender and placement. A reasonable cut-off point – one that provides sufficient reference to the overall male-female ratio of candidates – depends on the election in question. In that respect running an OLS over all places may not be a bad strategy in 2003.

Some authors have used a binary dependent variable such as “first position” or “top position” to analyze the relationship between gender and list placement (Kunovich, 2003). This method takes account of all cases, thus avoiding the problem of no or incomplete reference to the lower places. The flip side with this approach is losing information in the dependent variable. The best strategy may be to use both methods with various cut-off points and definitions of “top position”.

Multiple regression models with cut-off points set at 30, 35, 40, 50 and 60 showed that female candidates were always positively related to position on the national list, meaning that women placed lower after controlling for age and incumbency (an overview of

regression results is shown in the appendix, Table 7, page 118). The statistical significance of the effect depended on the year and the cut-off point. Women were associated with lower positions more frequently in 1995, 1999 and 2011, placing, *ceteris paribus*, two or three positions lower than men. Gender had the weakest effect on national list position in 1992 and 2003. In 2003 the effect was weak because the aforementioned problem of insufficient reference to the overall male-female ratio of candidates. Gender becomes statistically significant in 2003 when the cut-off is increased to the 60th place and beyond.

For the logit models "top position" was defined as placing first, or among the 3, 5, 10 and 15 top ranked candidates. Results showed that female candidates were always negatively related to obtaining a top position and the effect was significant for at least one definition of "top position" for all elections except 1992. The effect of gender was strongest for the elections of 1995, 1999 and 2003. (A summary of the different regression results is again shown in the appendix, Table 8, page 119.) These two types of regression models on the effect of gender on list placement conform to what was presented in Table 5; parties have not placed female candidates in top positions in the closed national lists. This means that parties have not helped women to get elected from the closed lists.

To test for differences in women's placement between left and right parties models with interactions between party ideology and candidate gender were ran for 2003-2011. I included this in the model as there is evidence that in Estonia party ideology is associated to women's representation among party executives, candidates, and elected officials (see the appendix, page 116, for a discussion on this). Two different codings for left and right were used. In the first case ideology was coded only for the four major parties and in the second case all seven parliamentary parties of the period were coded. The OLS models on list place with various cut-off points showed that, regardless of the coding, women were usually associated with better positions in the left parties compared to those of the right.

The results for the logistic regressions on "top positions" were very similar – women were more often associated with these positions in left parties rather than in right parties. For both types of models the differences between parties were most noticeable for 2007. However, most coefficients on the interactions in the various models were not significant at the conventional levels. This is not very surprising as the number of women among this subgroup of candidates is small and the estimation becomes difficult when we further split female candidates by party ideology.

Overall these results tell us that without any quotas or placement mandates parties did not improve women's election chances by placing them further up in the closed list. On the contrary, parties use these lists to guarantee the election of male candidates.

The results also find some difference in placement between left and right parties – women are associated with higher positions and a greater probability of obtaining a top position in left parties compared to that of the right.

6.7. Conclusions

In the field of women's descriptive representation it is common to test individual level theories at the national level. For example, it has been argued by some scholars that closed list increase women's representation because parties can advance women's representation in a very direct manner. In open lists voter bias against female candidates may reshuffle the order and decrease women's representation. Other scholars have argued that higher turnover could improve the election of women because it decreases the advantages of mainly male incumbents. While these theories concern the individual level actions of voters and candidates, the testing is done at the country level because data on the individual level actors is unavailable.

The purpose of this paper has been to reexamine the previously advanced theories on the effects of list type and turnover on women's parliamentary representation using candidate data from six Estonian elections between 1992-2011. The analysis of these data make a number of important contributions to the current literature on representation. Most importantly, the results highlight the importance of individual level testing which can add important qualification to previous theory.

The first empirical section of the paper was concerned with establishing whether female candidates receive fewer votes than their male counterparts. If, everything else equal, women receive fewer votes this might indicate a voter bias. The models estimating candidates' vote shares found indeed that female candidates were often associated with fewer votes, but the effect was statistically significant in only three of the six elections. Furthermore, a more detailed analysis showed that the effect of gender on votes was driven by a large group of weak candidates, those who had no chance of elections. The relationship between gender and votes ceases to be significant among candidates who had a realistic chance of elections. Thus, once a candidate has become relatively well-known, gender has no impact on the decisions of voters.

A second piece of evidence for voter bias, or for the lack thereof, can be found by analyzing the effect of gender on election probability from the open lists. If voters were biased against female candidates, then women contenders would be associated with lower election chances. The paper found even less evidence of the effect of gender on election probability, than it did for votes. While gender sometimes has an effect on votes, this did not translate into an effect on the probability of being elected – women did not have a significantly lower chance of election. This is an interesting finding, and occurs because the relationship between gender and votes was driven by a large

group of weak candidates, those who received only 200-300 votes. These very weak candidates have no realistic chance of election and do not for this reason affect the overall election probability of women.

However, in 2003 female candidates did have a significantly lower election probability from open lists compared to men. I argued that this result occurred due to high turnover and the successful entrance of a new right wing party *Res Publica*. This new party had no women among the first ranked positions and fewer women than other parties among the top three in district lists. This played an especially big role in smaller district, where even the successful parties usually only win one seat. In such districts even those female *Res Publica* candidates who ranked second or third after votes tallies were unable to win a seat.

On a positive note, the above results on the effect of gender on votes and election chances in open lists tells us that, when the candidates have achieved a certain level of recognition, gender has no impact on the decisions of voters. A good female candidate is just as likely as a man to receive votes and win an open list seat. But on the negative side we still find that there is a significant gender vote gap among the large group of weak candidates. This may mean that when a candidate is new and unknown to the public voters preference is for the male contender. In other words, it might be more difficult for an unknown women candidate to enter politics.

Candidates' visibility and electability can, however, be significantly improved by the parties, either by campaign or by list placement. The Estonian electoral system allows parties to rank order candidates in the national and in the district lists. Particularly important for a new candidate can be the placement in the closed national party list, where a high ranking can guarantee election. Previous research has argued that closed lists are beneficial for women's election for exactly this reason – parties can get female candidates elected by placing them at the top of the closed lists.

But the evidence presented in this paper shows that women are associated with lower places on closed lists, even when controlling for incumbency and age. The relationship between gender and ranking in closed lists is quite interesting as it shows that over the course of the six elections there has been relatively little change in the positions in which women are placed. Generally women occupy the middle positions (places between 30-60) on the lists and men are more often placed at the top and the bottom of lists. Because parties rarely ever receive over 30 seats, candidates placed beyond that rank have little chance of getting elected from the closed list. Given this evidence, it is hard to argue that closed lists always improve women's representation. Much depends on parties willingness to support female candidates, and at least in Estonia, this willingness is in general lacking.

Of course, parties vary somewhat in their support for women's candidacy. It has been previously argued that social democratic parties are more willing to promote female contenders. The paper finds some evidence of party ideology affecting women's placement in closed lists. Women were in general associated with lower positions among right parties compared to left parties. The differences were, however, often not statistically significant.

In conclusion, the paper has argued that the effect of turnover and different types of lists may depend very much on the parties in the system. If parties with few women among candidates increase their representation, then turnover effects women's overall representation negatively. This also applies for party lists. Women may be disadvantaged by closed lists if parties place female candidates in unelectable positions. Closed lists are only beneficial for women's representation if parties want to promote female candidates. In both cases the driving forces behind the change are parties and not the closed lists or the turnover themselves.

This research and the testing of the causal mechanism at the individual level was possible because of the availability of candidate data for six consecutive elections, something not possible for most research. How can the country level research on women's representation take account of the theoretical improvements suggested in this paper? The paper suggests that, to test these hypotheses, it might be necessary to add more party level information into country level models. For example, if there are known differences between the left and right parties, researchers should include and interaction effect between turnover and ideology of the winning party. The interaction effect should be positive and high for parties of the left and negative or smaller for parties of the right.

Appendix: Parties and women's representation

This appendix provides evidence that Estonian parties differ with respect to women's representation. I will compare four major parties that have, with one exception, contested all six elections. The parties include the biggest left-left leaning Center Party (Kesk) and the smaller Social Democratic Party (SDE). From the right the appendix looks at the Reform Party (Ref) and the Pro Patria and Res Publica Union (IRL). The Reform Party has contested five of the six elections and has grown to be the biggest party in the system. The IRL is the result of multiple party mergers, the core of which has been the Pro Patria party that can be traced back to the first elections. In 2006 Pro Patria formed a union with Res Publica, the newcomer and winner of the 2003 elections.

Aside the four, other parties have either contested one or two elections and disappeared from the system, dwindle on the fringe or have merged into one of the above. For the sake of simplicity I have ignored these parties. The second reason for focusing only on the four parties is the difficulty of ideological placement of the Estonian parties. This is especially the case for the first elections, when the dominant issues could not always be mapped on the traditional left-right scale and some parties had little ideological or policy orientation to begin with. The placement of parties is least contestable for the parliamentary parties at the last three elections.¹⁰

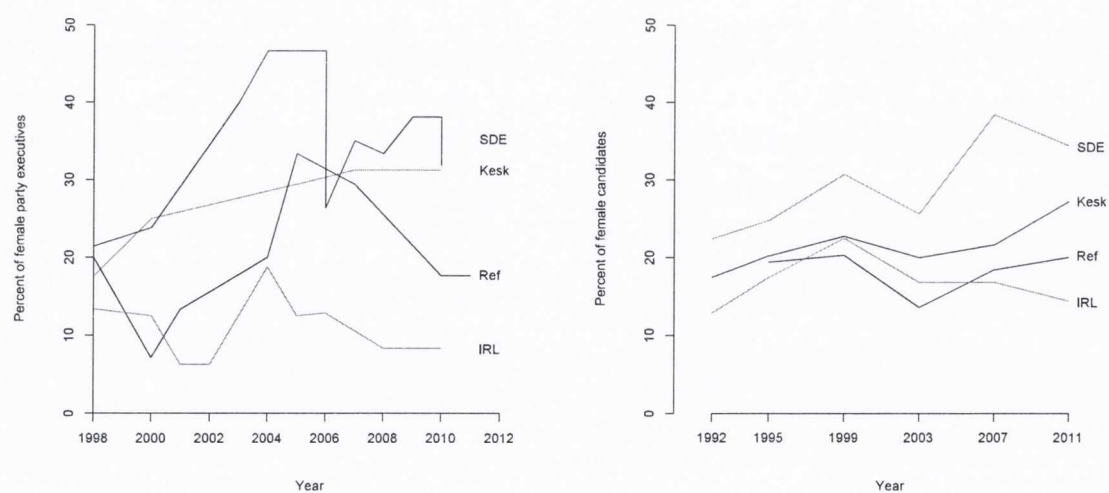


FIGURE 4. Women party executives and candidates by party, 1992-2011

Figure 4 shows how ideology is associated to women's representation in parties. It is clearly visible from the two panels that both of the left-leaning parties (SDE and Kesk) have more women among party executives and candidates. Further, while the

¹⁰For more information on the ideological placement of Estonian parties see Pettai and Kreuzer (1999) and Sikk and Andersen (2010).

percent of women has, to an extent, increased in SDE and Center Party, it has remained constant in the right-wing Reform Party and IRL. On average, the left parties also have more female MPs. With one exception, the percent of female MPs has never reached 20 in either of the right parties. In the left parties women frequently make up over 20% or even over 30% of delegates. However, there is considerable fluctuation as party delegations are relatively small, ranging from 6 to 32.

Appendix: Ancillary models

TABLE 6. Explaining candidate vote shares, party random effects

	1992		1995		1999		2003		2007		2011
Intercept	-5.039 ***		-5.823 ***		-6.226 ***		-5.311 ***		-5.036 ***		-4.931 ***
	0.236		0.251		0.207		0.272		0.349		0.262
National list	-0.003		-0.004 ***		-0.005 ***		-0.008 ***		-0.007 ***		-0.007 ***
	0.002		0.001		0.001		0.001		0.001		0.001
District list	-0.278 ***		-0.219 ***		-0.084 ***		-0.168 ***		-0.205 ***		-0.189 ***
	0.023		0.013		0.005		0.012		0.011		0.013
Age	0.012 **		0.006 **		0.007 ***		0.005 **		-0.002		0.002
	0.004		0.003		0.002		0.002		0.002		0.003
Incumbent	0.787 ***		0.806 ***		1.376 ***		0.421 ***		0.485 ***		0.648 ***
	0.158		0.125		0.123		0.099		0.106		0.106
Female	0.163		-0.200 **		-0.155 ***		-0.078		-0.154 **		-0.092
	0.117		0.077		0.053		0.064		0.064		0.075
District party	4.602 ***		4.690 ***		5.199 ***		5.053 ***		4.022 ***		3.843 ***
	0.668		0.557		0.509		0.483		0.531		0.470
<i>N</i>	629		1251		1884		963		975		789
<i>N_{parties}</i>	18		17		13		12		12		10
BIC	1884.758		3731.373		5516.166		2457.590		2626.364		2128.935

****p* < 0.01; ***p* < 0.05; **p* < 0.1
Note: The number of parties in the regression model includes a separate category for independents.
Standard errors are shown below coefficients.

TABLE 7. The coefficients on “Female” for models predicting national (closed) list placement

<i>N</i> positions included	1992		1995		1999		2003		2007		2011
<i>OLS</i>											
30	0.413		2.025 *		1.511		0.116		0.717		3.353 **
35	1.788		0.562		2.777 **		0.013		0.300		3.586 **
40	0.487		1.176		2.445 **		-0.534		1.050		3.784 **
50	0.373		2.160		2.493 *		1.073		0.352		1.542
60	-0.307		2.703 *		1.968		2.828		0.744		1.411
<i>Party random effects</i>											
30	0.203		2.290 **		1.356		0.622		0.777		1.824 *
35	1.436		0.740		2.659 **		0.780		0.433		1.665
40	0.402		1.230		2.361 **		0.466		1.423		1.722
50	0.616		1.887		2.438 *		1.801		1.301		-0.836
60	0.673		2.417 *		1.951		3.300 **		1.919		-1.098

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

TABLE 8. The coefficients on “Female” for models predicting top placement in national (closed) lists

Top placement	1992	1995	1999	2003	2007	2011
<i>OLS</i>						
1	-0.272	-0.887	-0.675	-1.259 *	-0.623	-0.774
3	-0.143	-0.517	-0.385	-0.911 *	-0.765 *	-0.385
5	-0.074	-0.708 *	-0.245	-0.671 *	-0.290	-0.303
10	-0.211	-0.364	-0.417 *	-0.144	-0.013	-0.410
15	-0.037	-0.426 *	-0.432 **	-0.029	0.083	-0.538 **
<i>Party random effects</i>						
1	0.534	-0.989	-0.675	-2.050	-1.055	-2.005
3	0.246	-0.570	-0.363	-1.132 *	-1.082 **	-0.116
5	0.159	-0.824 **	-0.208	-0.857 **	-0.518	0.042
10	-0.341	-0.451	-0.456 *	-0.312	-0.200	-0.136
15	-0.247	-0.553 **	-0.494 **	-0.165	-0.122	-0.372

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

CHAPTER 7

Conclusions

At the beginning of this dissertation I raised the question of what explains the difference in the percent of women in national parliaments. Why have some new and established democracies (such as Finland and South Africa) seen major increases in female legislators in the past decades and others (Japan and South Korea) not? To answer this question I have taken the most viable theories of women's political representation and improved them to provide a more comprehensive answer. The three papers presented here have focused on the effects of socioeconomic conditions and electoral institutions on women's representation. My goal has been to develop the current theories by paying more attention to how different factors work together to shape women's representation and not so much to introducing completely new hypothesis. In the empirical tests the emphasis was on building models that reflected the elements of the theory better. For this purpose the dissertation departs from much of the previous work by using dynamic model specifications.

The dissertation uses two original data sets. The macro level data set was compiled using data from previously published research and different international organizations. The research here also required the coding of new variables, such as party quotas. The micro level data set was constructed and coded based on the data published by the Estonian National Electoral Committee.

The first paper of the dissertation (Chapter 4) explored the effects of socioeconomic conditions (e.g. economic development, female employment rates and welfare spending) on women's political representation. The relationship between socioeconomic conditions and representation has puzzled researchers for years because the empirical evidence often seems to defy the theoretical expectations. Increased development and women's participation in the labor force should increase women's opportunities to have a stronger voice in politics and should ultimately lead to more female candidates and legislators. The evidence is, however, often conflicting. Particularly intriguing for many authors has been the case of the United States, which has one of the highest development and female employment levels, but ranks among the lowest in female representatives.

Those who have tried to find answers to these exceptions within the framework of socioeconomic conditions have often pointed to the role of the welfare states in shaping women's lives. It has been suggested that welfare state spending and type can have an

impact on women's socioeconomic status and reframe the central governments role in a way that makes women's roles and experiences, and thus also their presence, central to the state's functions. Thus, exceptions like the United States can be explained away by the absence of a strong welfare state.

In this dissertation I have argued, first, that the above approach of introducing welfare state spending to explain female legislative seats is problematic. Secondly, I have proposed a new explanation to understand why some well developed nations with high women's labor force participation have so few female representatives. Including welfare spending in models of women's representation is problematic because it a direct product of legislation and thus potentially highly endogenous to representation. The possibility of a reverse causation is introduced by the findings in the field of women's descriptive representation that analyzes the behavior of female legislators. Works in this field have frequently found that female representatives are more likely to support welfare expansion than their male counterparts. In the first paper of this dissertation the problem of endogeneity was empirically analyzed using structural equation modeling. The results are strongly suggestive of a reverse causal relationship and thus welfare spending should not be used to explain female legislative seats shares.

But the point here has not been to suggest that welfare regimes are unimportant, rather, the paper emphasizes that researchers have to think much harder about the appropriate ways of including welfare regimes in models explaining female representation. This brings us to the main contribution of the paper on socioeconomic conditions. A more productive line of research may be to use welfare state outcomes as predictors of representation. While these often correlate strongly with welfare spending, they are not direct products of legislation like spending is. Women's participation in the labor force is an example of such indicators, but we also know that this measure is unable to capture all the necessary differences between welfare state regimes. In this paper I argue that we should also use indicators of income inequality to explain women's political representation. Income inequalities capture an important aspect of welfare states that female employment on its own can not.

The dissertation outlines two main explanations how income inequalities impact women's political representation. First, high income inequalities are associated with high low-pay incidence among women. So, while female employment may be high, a large proportion of women in countries with high inequalities are employed at jobs that provide few skills and resources and are thus not conducive to political participation and representation. Secondly, many authors have argued that gender equality is a stratified phenomenon – women of the upper class are more likely than women of the lower class to experience gender equality at home and at the office. The difference in the gender equality experienced by the different classes of women is especially large in countries

with high class inequalities. I have argued that because there are more women experiencing gender inequalities in countries with high class inequalities, women's political representation in those countries should be lower.

The empirical results presented in Chapter 4 provide support for this, and countries with high income inequalities will, over time, have fewer substantially female representatives. Three different measures of income inequalities were used and they all showed that while the initial effect of an increase in income inequality had a fairly marginal effect on representation, over multiple elections the effect is quite substantial. For example, any point increase in women's or overall low-pay incidence will eventually be matched by a decrease in women's representation of the same amount.

It is important to also note that previous studies have essentially argued that women's political representation is driven by the most successful women, in other words, women's representation is seen to depend on how many women hold managerial jobs. This dissertation suggests that it is in fact the bottom that drives the gender representation gap. It's the size and socioeconomic conditions of the lower-class women that have the strongest impact on the proportion of female legislators. The size and socioeconomic conditions of the lower-classes determine how many women are still stuck "doing gender" and employed in jobs that provide little skills and resources for political participation at the highest level.

The intersection of class and gender can help us understand some of the different levels of women's representation in the four nations presented at the beginning of this dissertation. I showed that women's representation in Japan and South Korea has remained very low. Overall this corresponds to what we would expect based on the socioeconomic position of women in the two nations. While women's employment is somewhat below the average of the OECD nations, the share of low-pay incidence among women in the two countries is the highest in this group of countries. In South Korea and Japan, almost half the women who work do so at low-paid jobs. Thus, while many women can find employment, they do so overwhelmingly in positions that are not likely to provide them with financial and/or social capital necessary to successfully run for political office.

In contrast to Japan and South Korea, women's employment in Finland is very high and their low-pay incidence very low. This means that women of both the upper and the lower class would be able to accrue resources that help them participate in politics. And as we can see, women's representation in the Finnish parliament is very high. Similarly high is the percent of female legislators in South Africa. This is unexpected, given that the female employment rates are about average compared to other democracies. Also, if the same relationships between class and gender equality were to hold in developing nations, political representation in South African should be further decreased by

extremely high class inequalities. The mediocre female employment, low development and high income inequalities would all suggest that women's representation should not be near parity in this country, and we have to look for an explanation elsewhere.

The two other papers of this dissertation (Chapters 5 and 6) analyze the effect of institutions on women's representation. The first of these is a cross national study of 75 democracies that explores the effects quotas, personal vote incentives and district magnitudes have on women's representation. The central argument of Chapter 5 is that the effect of different electoral institutions is conditional on other institutions and on culture. Previous research has, with few exceptions, analyzed the effect of institutions in isolation and this has lead to unreliable conclusions about the effectiveness of any individual institutional factor in increasing women's representation. I show that accounting for the conditional effects of institutions is an important contribution to the literature because this may change our conclusions about the effectiveness of each individual institution on representation. Depending on the context, the role quotas, district magnitudes or personal vote incentives play in shaping female legislative seat shares can be increased or decreased.

Chapter 5 first examines the relationship between legal quotas and personal vote incentives. Previous work has shown that legal quotas increase women's representation, and especially so when these quota legislation also includes enforcement mechanisms and placement rules. Others have found that strong personal vote incentives, such as open lists, decrease women's electoral chances. In this dissertation I argue that we have to consider the two institutions, legal quotas and personal vote incentives, together. The effectiveness of quotas should depend on personal vote incentives – legal quotas should be more effective in candidate centered closed list systems because there voters can have no effect on the rank order of candidates and the rules set by quotas should be directly reflected in election results.

The empirical results support this claim and show that legal gender quotas are approximately twice as effective in countries that use party centered electoral systems compared to those with candidate centered systems. Further, unlike some previous research, the paper also finds that weak legal quotas (those without enforcement and/or placement rules) do not differ substantially in their effectiveness in increasing women's representation compared to strict legal quotas (with both enforcement and placement rules). Thus, the dissertation argues that the effectiveness of quotas is more dependent on the level of personal vote incentives provided by the electoral system, rather than regulation such as placement or enforcement.

Including the interaction between quotas and personal vote incentives tells us also something new about the independent effect of personal vote incentives on representation. Namely, this dissertation found no evidence for an independent effect of personal

vote incentives on women's representation. The different models in Chapter 5 each show clearly that party centered systems are associated with more female representatives only when we exclude quotas from the model. Thus, the previous works that have found such results are probably flawed by omitted variable bias because they have excluded quotas.

The effectiveness of legal quotas in a party centered system is very visible in Argentina, where women's representation has increased after the adoption of quotas from about 6% to 37%. I emphasize also that between 1993 and 1999, when Argentina did not use placement or enforcement rules, women's representation rose by 20%. This highlights that weak quotas can also be effective. While South Korea implemented legal quotas in 2004, their effect has thus far been very limited, increasing representation from six to 13%. Since the full effect of quotas is felt over multiple elections, one might argue that there will be further increase in female legislators over subsequent elections. Other factors, however, speak against it. Korea uses a mixed electoral system where a 50% gender quota applies to the PR tier and a recommended a 30% quota to the SMD. Because less than 20% of representatives are elected under PR rules, the weighted effect of the quota is only about 9% at the PR level. This is a very low quota and is unlikely to further increase representation. The weighted size of the SMD quota is much larger, approximately 24%. However, this research suggests quotas are less effective in candidate centered systems. Thus, given the electoral system and the manner in which these quotas are applied, this dissertation does not predict major increases in the representation of women in the Korean parliament.

In addition to quotas and personal vote incentives Chapter 5 also analyzed the interplay between district magnitudes and culture. I argued that large district magnitudes should increase women's representation the most when the dominant cultural attitudes favor female leadership. In countries with more favorable attitudes towards female leadership parties are more likely to place women on the lists and voters are also more likely to vote for them. In countries where the majority of voters believe that men make better leaders the parties and voters alike are unlikely to support women's candidacy to office. Thus, even though large district magnitudes would allow the balancing of candidate lists, the negative attitudes towards female leadership would prevent this from happening. The data analysis supports this claim and shows how district magnitudes have a substantially larger effect on female representation when public attitudes are favorable towards female leadership. This is an important contribution to our understanding of how institutions work to shape representation – electoral systems do not exist in isolation and no matter how *potentially* beneficial they may be for women's representation, their actual effect depends on the attitudes of voters and parties alike.

The large district magnitudes combined with positive public opinion of women's participation in politics is part of the reason why Finland has such high numbers of female

legislators. The coupling of the egalitarian norms and the proportional system has increased women's representation in the Finnish parliament in addition to the input of the socioeconomic status of women. In contrast, the district magnitudes in Japan have been low, both under the SNTV and the mixed system used today, and the public attitudes towards female leadership are fairly negative. The latter also means that a change to a more proportional system in Japan would be unlikely to have a positive effect on representation.

The empirical evidence in Chapter 5 also showed that party quotas can be effective in increasing women's political representation. In South Africa party quotas have been successful in helping women overcome obstacles that otherwise decrease women's representation. As was mentioned, the socioeconomic conditions would predict fairly low female representation, as would the fairly negative attitudes towards female leadership (approximately half the people believe that men make better leaders). Even though the country uses a PR system, these negative attitudes would still inhibit women's election. Thus, the party quota used by the dominant African National Congress Party has been the driving force of the steady increase in the representation of women over the past elections.

The last of the three papers, Chapter 6, analyzes the effect of institutions at the individual level, using candidate data from six Estonian elections. The purpose here was to investigate whether voters are biased against female candidates by being less likely to cast a vote for them and thereby weakening their chances of elections. If female candidates were associated with fewer votes and lower election probabilities this would indicate that open lists might indeed be detrimental to women's representation in national parliaments.

The empirical results of this chapter are very interesting and show that while women have, at some elections, received fewer votes than men, it has not affected female candidates chances of election from the open lists. After a closer examination it appeared that the gender difference in votes was largely driven by a group of weak candidates (those who earn very few votes). These candidates, however, have virtually no change of election and do not affect women's election probabilities. I concluded that, from a positive angle, gender does not affect election probabilities and there is no consistent voter bias against female candidates among candidates who have already achieved a certain level of recognition. On a negative note, the paper did find that there is a gender gap in votes among those candidates who are unknown to voters. This may mean that women have a more difficult time entering politics than men.

Because many researchers have previously argued that under closed lists parties can improve women's chances of entering politics and getting elected, Chapter 6 explored this idea by testing for the effect of gender on placement in closed lists. If women were

given higher positions than men, parties would be helping women get elected. Contrary to what has been suggested, I found that women were more likely to be given lower positions on the party lists than men. In other words, parties did not promote female candidates by using the closed lists, instead they used these list to guarantee election for their male leadership.

While Chapter 6 found no clear voter bias in women's election probabilities, women's representation the Estonian parliament is not particularly high (just over 20%). Borrowing from the cross national chapters, I would argue that women in Estonia are disadvantaged by their socioeconomic position and to an extent also by public opinion. While female employment in Estonia is quite high, the gender wage gap is one of the highest in Europe, indicating that many women are employed in low-paid jobs that are not conducive to political participation at the highest level. While public opinion towards women's representation has improved, it still trails far behind it's northern neighbors. This would also restrict the effect the generally high district magnitudes would have on women's representation.

What can be concluded from the three papers and the few examples briefly reviewed here is that there are various paths to high female representation. In Finland this has been achieved mostly through the socioeconomic position of women and the positive public attitudes coupled with the PR system. Finland has never (or, has never had to) used any specific legislation, such as quotas, to increase women's representation. In contrast, in South Africa and in Argentina, institutions, particularly gender quotas applied in a party centered PR system, have helped overcome the socioeconomic and cultural disadvantages women's political representation would otherwise face. In Estonia the socioeconomic factors and the institutions are not particularly beneficial for female representation, but neither are they exceptionally discouraging. For example, while women earn less than men, female employment is one of the highest among the OECD nations. Unfortunately, women in Korea and Japan face obstacles to representation in all fronts and thus have one of the lowest female representation in parliaments in the world. Quotas have not helped overcome these obstacles in Korea because of their effectively small size and implementation in single member districts.

Improving our understanding of what shapes women's descriptive representation can also help us explain better the underrepresentation of other social groups. The findings of the three papers presented here can, for example, be extended to minorities. First, the underrepresentation of minorities can just as well be caused by class divisions, especially when class and ethnic or racial divisions coincide. It is also worth noting that while increasing ethnic or racial diversity among high-skilled professions can benefit minority groups, this research suggests that their descriptive representation will remain low if a large segment of this minority are still socioeconomically disadvantaged. We have also learned what institutions can do to help the representation of different social

groups. The conditional effects of institutions and culture are just as important for minorities as they are for women. Minority quotas in candidate centered systems would be less effective than the same quotas in party centered systems and large district magnitudes would improve diversity when the public and parties are willing to actually balance the party lists.

In conclusion, this dissertation has made a number of contributions to the study of representation. It has shown how socioeconomic inequalities are, in the long run, important determinants of descriptive representation. If a large segment of a social group is affected by economic inequalities, their chances of proportional representation among legislators is decreased. The thesis also showed that we cannot isolate institutions from the context, and that their effectiveness can only be studied in relation to each other and considering other factors. For example, large district magnitudes increase diversity in representation where there is willingness among the public and parties to broaden the sociodemographic representativeness of the parliament.

Appendix: Data and measures

Case selection

TABLE 1. Countries and number of elections in the data set

Country	Years	<i>N</i>	% Women*
<i>Africa</i>			
Benin	1991-2007	5	9.6
Botswana	1984-2009	6	7.9
Cape Verde	1991-2006	4	20.8
Ghana	2000-2008	3	7.9
Mali	1992-2007	4	10.2
Mauritius	1983-2010	7	16.1
Namibia	1994-2009	4	22.2
South Africa	1999-2009	3	43.5
The Gambia	1992	1	0
Lesotho	2002, 2007	2	24.2
Zambia	1991	1	4.7
<i>Asia</i>			
India	1980-2009	8	10.8
Japan	1980-2009	10	11.3
Korea, South	1996-2008	4	13.7
Mongolia	1996-2008	4	4.0
Philippines	1987, 1998	2	15.7
Thailand	1988, 2001	2	8.4
<i>Australia</i>			
Australia	1980-2010	12	24.7
New Zealand	1981-2008	10	32.2
Papua New Guinea	1982-1992, 2002	4	0.9
Solomon Island	1993, 1997	2	2.0
<i>Eastern Europe</i>			
Bulgaria	1994-2009	5	20.8
Czech Republic	1998-2010	4	22
Estonia	1995-2007	4	19.8
Hungary	1994-2010	5	9.1
Latvia	1995-2010	5	19.0
Lithuania	1996-2008	4	17.7
Poland	1993-2007	5	23.9
Romania	1996-2008	4	11.4
Slovakia	1998-2010	4	15.3
Slovenia	1996-2008	4	13.3
Croatia	2000-2007	3	23.8

*Continued**Middle East*

Israel	1981-2009	9	17.5
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North America

Canada	1980-2008	9	24.7
USA	1980-2010	16	16.8

Northern Europe

Denmark	1981-2007	10	39.1
Finland	1983-2007	7	42.5
Iceland	1983-2009	8	42.9
Norway	1981-2009	8	39.6
Sweden	1982-2010	9	45.0

South America

Argentina	1987-2009	11	37.7
Bahamas	1982-2007	6	12.2
Barbados	1981-2008	7	10
Belize	1989-2008	5	0
Chile	1993-2009	5	14.2
Costa Rica	1982-2010	5	38.6
Dominican Republic	1982-2010	8	20.8
Guyana	1997-2006	3	30.8
Jamaica	1980-2007	7	13.3
Panama	1994-2009	4	8.5
Trinidad and Tobago	1981-2010	9	29.3
Uruguay	1989-2009	5	14.1
Bolivia	1985-2002	5	18.5
Brazil	1986, 1990, 2002-2010	5	8.6
Ecuador	1986-1994, 1998	6	17.4
El Salvador	1997-2009	5	26.2
Honduras	1985, 1989, 1997	3	9.4
Mexico	2000-2009	4	28.2
Peru	1980, 1985, 2001-2006	4	21.5
Venezuela	1983-1988, 1998	3	13.0

Southern Europe

Cyprus	1985-2006	5	10.7
Greece	1981-2009	10	17.3
Italy	1983-2008	8	21.3
Malta	1981-2008	7	9.2
Portugal	1980-2009	10	26.5
Spain	1982-2008	8	36.0

Western Europe

Austria	1983-2008	9	27.3
Belgium	1981-2010	9	39.3
France	1981-2007	7	18.5
Germany	1980-2009	9	32.8
Ireland	1981-2007	9	15.1
Luxembourg	1984-2009	6	25
Netherlands	1981-2010	10	40.7
Switzerland	1983-2007	7	29.5
United Kingdom	1983-2010	7	22.0

Total 75

455

Note: For all regions the table first list the stable democracies, followed by the unstable democracies

*The percent of female representatives after the most recent democratic election.

Description of variables

Percent of female MPs. Measured as a percent. The dependent variable in the macro level study is the percent of female representatives. While some research has used the logit or log-odds transformation of the percent variable (Salmond, 2006; Rosenbluth, Salmond and Thies, 2006; Tripp and Kang, 2008), this dissertation does not do so. These transformations have been used to account for the fact that the percent variable is bound at 0 and 100. In such cases the OLS predictions may produce impossible results (e.g. values over 100% or below 0%). The second reason for using a transformation may be the distribution of the dependent variable, which is not normal and heavily skewed to the right. However, in dynamic models, when we have accounted for the lagged dependent variable, none of these issues arise. The predicted values are in the range between 0 and 100 and the LDV also guarantees that the distribution of the dependent variable is now conditionally normal.

In some countries not all members of the parliament are elected. The percent of female representatives only refers to those elected by popular vote. In Argentina half of the assembly is renewed at every election. The percentage of women refers to the those elected at each year, in other words, to half of the assembly. For earlier elections in Argentina this breakdown of representatives by gender voted in at each election was not available, and thus I had to use the percent of women in the whole parliament. For Cyprus all data refers only to the 56 seats of the Greek community. The data on women's representation comes from a number of sources, but mainly from various publications by the IPU (e.g. various editions of *Women in Parliament: The year in perspective* and *Women in Parliament, 1945-1995*).

Effective number of parliamentary parties (ENPP). Measured as a number. The effective number of parties (Laakso and Taagepera, 1979) was calculated for both electoral (ENEP) and parliamentary parties (ENPP). In cases where the results included the "Others" category, the method proposed by Taagepera (1997) was used. The same method was used by Clark and Golder (2006). The "others" category was usually small enough to not make a major impact on the results – most of the time the effect was visible only in the (second) decimal. The ENPP and ENEP correlate very strongly and are pretty much interchangeable in models. Because data on the distribution of seats in parliaments was more readily available compared to voting results the dissertation uses the effective number of parliamentary parties.

Most of the older data comes from Clark and Golder (2006), but the data has been significantly supplemented by the authors calculations. IPU and other various sources were used for calculations (see page 151 for an extensive list).

Weak legal quotas (WLQ) and strict legal quotas (SLQ). Measured as a percentage. In both cases the variable reflects the percent of candidates that is required to be female by election law. Weak legal quotas reflect those cases where the law does not provide for placement and/or enforcement and the strict quotas to those elections where both enforcement and placement rules were used.

If in mixed electoral systems the legal quota only applied to the proportionally elected members a weighed quota size was used. This was the case in two countries. During the 1998 elections Venezuela used a legal quota that required 30% of candidates to the parliament to be female. The quota only applied to the closed lists, which are used to elect half the deputies. Thus the quota size in the data set is 15% ($0.5 \times 30\%$). In 2001 a legal quota was introduced in Bolivia, requiring every third candidate to be female (quota size 33%). Again, this applied only to the PR tier. Of the 130 MPs 60 are elected under PR (46%), the quota size is then $0.46 \times 33\% = 15\%$.

The data is mainly from the Global Database of Quotas for Women, IPU and Krook (2009), but other published articles were also consulted. When party and legal quotas were used simultaneously only the legal quota was coded as this applies to all parties. This coding decision applied in very few elections in Belgium, Dominican Republic, France and Costa Rica.

Party quota. Measured as a percentage. A system was described as having party quotas when the percent of seats held by parties using quotas approximated 40%. The 40% mark was a guiding principle and not a strict cut-off point. The party quota size was then calculated as the average quota size over all the parliamentary parties that used quotas. The data is mainly from the Global Database of Quotas for Women and Krook (2009), but other published sources were sometimes also consulted.

Personal vote incentives. Measured as a set of categorical variables. The dissertation uses three measures of personal vote incentives that are based on the work by Carey and Shugart (1995). "Ballot" is a three category variable that captures the degree to which parties control the access and rank to the ballots – coded "2" when ballot are open and parties do not control rank or access, "1" when parties have some control over access and rank, "0" closed ballots, i.e. parties control rank and access to ballots. "Vote" is a three category variable that captures whether voters choose between parties or candidates. It is coded "2" when voters have to choose between candidates, "1" when voters have an option to choose either between candidates or parties, "0" when voters have to choose between parties.

Based on the above measures the dissertation also uses a binary measure of a candidate centered system. This is coded "1" when both the "ballot" and the "vote" measures are coded "1" or "2". The measure "candidate centered" is "0" when both the "ballot"

and “vote” are zero. Data on personal vote incentives is mostly from Johnson and Wallack (2010) and Carey and Shugart (1995). Additional years and countries were coded based on data handbooks (e.g. Nohlen, Krennerich and Thibaut, 1999; Nohlen, 2005*a,b*).

Female employment. Measured as a percentage. The female employment rate divided by male employment rate, ages 15-64. The data is from International Labor Organization’s Key Indicators of the Labor Market (KILM) data base. Measuring women’s employment and education levels may seem straightforward, but has actually caused some confusion in the field. As recently pointed out by Stockemer and Byrne (2011), employment has sometimes been entered into models of women’s representation as the percent of employed women among all working age women. But this does not capture the comparative standing of women with regard to men – 50% employment rate for women may be low or high depending on men’s level of employment. It is more accurate to use women’s share in the work force – the percent of women among all workers – or measure women’s employment as the percent of men’s – female employment divided by male employment. This dissertation uses the latter measure because the original format of employment data made it easier to calculate.

Development. Categorical variable. In the dynamic models development is measured as a four category variable. This was done to avoid spurious regression. The measure is based on per capita GDP, constant 2000 US dollars. The four groups were created by using the 25th, 50th and the 75th percentiles as cut-off points. In the paper focusing on OECD nations (Chapter 4), development is measured as a two and a three category variable. In the cross-section model in Chapter 5 development is measured as the per capita GDP.

Income inequality/Gini index. Measured as a percentage. Income inequality is measured as the Gini index of inequality in household disposable income. The data is from Solt (2009).

Low-pay incidence. Measured as a percentage. Low-pay incidence is defined as the share in total dependent employment of workers earning less than two-thirds of median earnings. Two measures have been used – low-pay incidence among women and overall low-pay incidence. The former measures the share of female employees out of all female employees earning less than two-thirds of median income. The data is from OECD.

Controls explored but not used in main models

Suffrage and years from suffrage. Data on suffrage is from IPU. When suffrage was first introduced with restrictions and at a later time those restrictions were removed, the latter year was used (e.g. Iceland, Sweden, Romania).

Assembly size. Number of seats assembly seats or the number of seats filled by popular vote. Data is mainly from IPU.

Female education. The percent of female students enrolled in third level education divided by the percent of male students enrolled in third level education.

Religion. I used four percent variables indicating the percent of the population describing themselves as either protestant, catholic, orthodox or muslim. The variables were coded based on The World Factbook by CIA. Other religions were not coded as they were generally not prevalent in the countries included in this study.

Region. A categorical variable indicating the region of the world the country belongs to. The region each country belongs to are shown in Table 1, page 129.

Appendix: Methodological issues with TSCS data

Time-series-cross-section (TSCS) data introduce a number of complications for analysis. As many authors have pointed out, the first important question to ask before using panel data is whether the repeated measures on the same units are justified. In other words, is there sufficient within unit variation? As was shown in Figure 1 (page 19) the percent of female representatives shows a lot of variation across time and countries, so, using TSCS data is appropriate. When the use of repeated measures is justified, modeling will then have to take account of both the time-series and the cross-section structure of the data. This chapter reviews the potential problems and solutions when using TSCS data.

Time-series issues: Nonstationarity and autocorrelation

Stationarity. Probably the most important question of any time-series is whether the data is stationary or not.¹ Stationary time-series are mean reverting, with the mean of the series as the “equilibrium”. Stationary data tend to fluctuate around their mean with a broadly consistent amplitude. A nonstationary time series will have a time varying mean and/or a time-varying variance. Nonstationary series have no equilibria. Whether a time-series is stationary or not will have significant modeling consequences. Regressing one nonstationary time-series on one or more other nonstationary time series may produce spurious regression – we conclude that there is a significant statistical relationship between the variables, even if the series are completely unrelated. Distinguishing between the two types of time-series is thus very important, but unfortunately, it is not always easy, especially if time series are short. The usual methods for testing stationarity are graphical analysis of the time-series and its autocorrelation function, and testing for unit-roots.

Nonstationarity and spurious regression are important for the dependent variable (percent of female MPs) and the two explanatory variables female employment and development (per capita GDP).² Especially problematic is the relationship between women’s representation and per capita GDP. Visual inspections showed that per capita GDP is trending upward in all countries, suggesting that the series is nonstationary. Table 2

¹This section relies heavily on Gujarati (2003).

²Spurious regression does not concern other variables because they are generally fairly constant over time (e.g. institutions).

provides evidence that also suggests the presence of a unit-root in the per capita GDP. The confidence intervals of the autoregression coefficient on GDP include 1 in all three countries shown and the augmented Dickey-Fuller (ADF) test cannot reject the null of a unit-root. (We should, however, keep in mind here that the ADF tests for unit-root is biased with short time series and accept the null of unit-root more frequently than warranted.)

Establishing whether the series are stationary or not is much less straight forward for the percent of female representatives and female employment. The percent of women in national parliaments shows an upward trend in most, but not all of the countries studied here. Figure 1 shows the trends in four countries. In the US the series shows little upward trend before the 1980s, but during the period of interest here, women's representation shows an increasing trend. Finland and Sweden are quite the opposite, as there is much more fluctuation and less clear evidence of a trend in the post 1980 period. The tests in Table 2 show that in none of the three cases can we reject the null hypothesis of a unit root based on the ADF test. However, in Sweden and particularly in Finland the test statistic is much larger and we come fairly close to rejecting the null of a unit root in Finland. The Figure 1 also shows Argentina, which is an example of another special case. Here women's representation rises rapidly over a couple of elections (during the 1990s), but fluctuates at a constant level before and after this increase. This indicates a structural break in the time series (possibly due to quota adoption) and is not necessarily evidence of nonstationarity. Unit-root tests cannot capture such structural breaks and may misleadingly conclude that the data is not stationary.

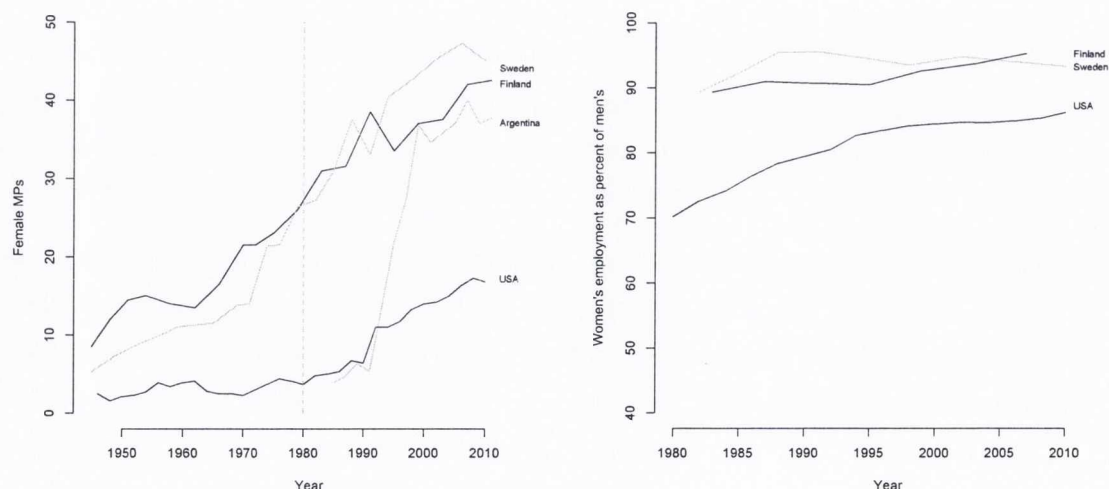


FIGURE 1. Time-series plots of women's representation and employment.

TABLE 2. Autoregression and unit root tests

	All countries			USA			Sweden			Finland		
	β	SE		β	SE		β	SE		β	SE	
Per capita GDP												
Intercept	352.728	108.636	***	1124.205	496.223	**	1160.324	1307.847		-1020.110	1374.322	
GDP _{t-1}	1.043	0.007	***	0.995	0.019	***	1.010	0.061	***	1.165	0.078	***
N		514			25			15			10	
ADF test				-2.141	0.519		-2.045	0.555		-1.853	0.628	
Percent female MPs												
Intercept	1.264	0.189	***	0.220	0.302		2.072	1.246		2.612	1.727	
Female MP _{t-1}	1.018	0.013	***	1.035	0.037	***	0.993	0.047	***	0.970	0.065	***
N		712			32			21			18	
ADF test				-1.278	0.852		-2.116	0.528		-3.108	0.150	
Female employment as a percent of men's												
Intercept	5.357	0.540	***	12.124	1.994	***	67.232	17.699	***	-3.947	28.512	
Employment _{t-1}	0.954	0.007	***	0.862	0.025	***	0.288	0.189		1.054	0.312	**
N		404			15			8			6	
ADF test ⁺				-2.128	0.524							

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Dickey-Fuller statistic is followed by the p -value.
⁺The ADF test is not shown for series that have a length smaller than 10.

Women’s employment as a percent of men’s shows the least visual evidence of a clear upward trend. In Sweden the series is stable and shows minor fluctuation. The autoregression coefficient in table is very small and statistically not different from zero. The case of Finland is similar, but the confidence intervals of the autoregression coefficient include one, suggesting a unit root. The US shows the clearest upward trend visually and the tests also suggest a unit root.

What should we conclude from the above results? Are the three data series nonstationary and is there a risk of spurious regression? The evidence strongly suggests that per capita GDP is nonstationary. If women’s representation is also nonstationary we do have a risk of spurious regression. The data on women’s representation however provides inconclusive results – yes, there are trends in some cases, but not in all countries, and in some the trend is caused by a structural break and not by nonstationarity of the data. But to avoid the possibility of spurious regression we can use a categorical variable to capture development. A categorical coding of the development would not cause spurious results.

The relationship between employment and representation is more complicated as both variables indicate some evidence of nonstationarity, but also of stationarity. Here I rely on Beck and Katz (2011), who argue that while many political science data appear to have unit roots, they simply cannot be nonstationary. They write that the problem with political science data is that we usually only observe relatively short time-series of 20-40 years. Even though the series may show persistent trend, we cannot say if over a longer time period the series would become stationary. They further argue that data that is measured in percentages are by definition bounded between 0% and 100% and thus constrain how large their variances can become (nonstationarity would require the variances to wonder infinitely). The percent of female MPs and female

employment cannot trend infinitely and one could even argue that, over a long enough time period, we would expect both series to become and remain around parity (as suggested somewhat by the data for Finland and Sweden). Thus, while the tests of stationarity suggest that the series could have a unit root, it is theoretically not possible given the nature of the data. Here I treat the percent of female MPs and female employment as stationary time series.

Autocorrelation. The second issue we have to deal with is autocorrelation, that is when the values of consecutive time periods correlate (e.g. previous values of women's representation predict future values). Running an OLS regression with autocorrelated data will produce serial correlation in errors and our estimation will become biased. For a long time it was common in political science to treat serially correlated errors as a nuisance and solve the estimation problems using FGLS with first-order serially correlated errors such as Cochrane-Orcutt or Prais-Winsten method (often just called AR(1) correction in errors). The latter has been most common in the field of women's representation, but the two produce similar results.

There are two main problems with the methods that correct for serial correlation in the errors. First, Monte Carlo studies have shown that these models cannot fully account for all the serial correlation and are seriously biased even when autocorrelation is small (Keele and Kelly, 2006). In other words, even after the corrections, the errors are often still serially correlated. This is also the case with the data of women's political representation. Table 3 shows a basic model of women's representation that includes the main institutional (district magnitudes, effective number of parliamentary parties, quotas) and socioeconomic (female employment and development) effects. Both the AR(1) error correction and a lagged dependent variable (LDV) model are presented. Including the lag of the dependent variable in an OLS regression is also known to correct for serial correlation. The table also shows the Breusch-Godfrey test of serial correlation. We see from these test results that the null of no serial correlation is rejected for AR(1) error correction model – the residuals are still autocorrelated. The null is however not rejected in the LDV model – the residuals of this specification show no autocorrelation.

The model estimates are also very different. While the first model shows a strong positive effect of female employment and development on female representation, the second shows no such effect. Does that mean that employment and development have no impact? Yes and no. As discussed in the literature review, some research suggest that female employment only has an effect in developed countries, but the current models assumes the same effect in all countries. From that perspective both models in Table 3 are misspecified and should include an interaction between development and female employment. We will later see that this makes a difference in the results.

TABLE 3. Basic serially correlated error and LDV models

	AR(1) correction			LDV		
	β	SE		β	SE	
Intercept	-11.633	3.283	***	0.781	0.972	
Female MP				0.894	0.025	***
Log(DM)	1.871	0.416	***	0.630	0.147	***
ENPP	-0.126	0.196		-0.223	0.112	**
Party Quota	0.099	0.020	***	0.036	0.012	***
Weak Legal Quota	0.144	0.030	***	0.098	0.021	***
Strict Legal Quota	0.187	0.042	***	0.087	0.029	***
Employment	0.267	0.040	***	0.022	0.013	*
Development level						
Medium Low	3.634	1.961	*	-0.373	0.606	
Medium high	3.449	1.952	*	-0.016	0.550	
High	6.098	2.106	***	0.738	0.574	
<i>N</i>		455			455	
AIC/ <i>R</i> ²		2635.642			0.889	
BG test	12.537	0.000	***	1.655	0.198	

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
The Breusch-Godfrey statistic is followed by the p -value.

But the small residual autocorrelation in the errors is not the most important problem with the AR(1) error correction methods. The bigger issue with the latter models is that they do not account for the dynamic properties of the data. That is, they do not account for situations where some variables have an impact that is distributed over time (Beck and Katz, 2011). When the lag of the dependent variable is excluded from the model (as in AR(1) error correction methods) the effect of the covariates is felt immediately and completely. In other words, x will effect y only at the current time period. The inclusion of the lag dependent variable means that the effect is distributed over time. The explanatory variables x effect y at the current period and also in the next periods. If the model dynamics are fast (the coefficient on lag y is small), then the serially correlated error methods and the LDV model give very similar estimates. However, if the dynamics are slow (the coefficient on lag y is large), the two approaches produce different results.

There are many different dynamic specifications to chose from and the frequently used LDV specification is just one among many. Following the recommendations of other scholars (e.g. Wilson and Butler, 2007; De Boef and Keele, 2008; Beck and Katz, 2011) I have estimated a number of dynamic models and then tested the models to determine the most suitable specification. The autoregressive distributed lag (ADL) model is the most general dynamic model and includes the lag of the dependent variable as well as lags of all the independent variables. Other dynamic models are nested in the ADL and can be tested against it (e.g. using the F -test). The nested models I tested against the ADL were the the LDV, the finite distributed lag (FDL) and the dead start (DS) specifications, i.e. all the common dynamic specifications. The FDL is similar to the AR(1) model as it does not include the lagged dependent variable, but

unlike the AR(1), the FDL includes the lags of all the independent variables. This way the independent variables will have an effect that is distributed over two time periods (current and the immediately following periods). I rejected the FDL model based on the F -test, which showed that it had a significantly weaker explanatory power than the ADL model, and also because of high residual autocorrelation.

The DS is similar to the LDV as it uses the lagged dependent variable, but unlike the LDV, the DS includes the lags of all the independent variables, and not their current values. This way the effect is assumed only to be distributed over future periods and no effect is felt immediately. The DS model generally performed well and was not dissimilar from the ADL or the LDV models. In the end, however, I decided to reject the dead start specification based on two considerations. First, the F -test showed that it fared slightly worse than the ADL (F -test was significant at $p < 0.1$ level). Secondly, the DS is theoretically less preferable as some explanatory variables, e.g. quotas, should also have an immediate effect on women's representation.

The LDV model shows a similar model fit to the ADL and we cannot reject it based on the F -test. Table 4 presents these two dynamic specifications (LDV and ADL) of the basic model of women's representation along with some test statistics. The basic model here is also fixed to include the interaction between development and female employment. Because data were not available for many of the lagged independent variables, the data set is smaller than the number of elections initially suitable for the study. Both models show minor residual autocorrelation, but since it is small, it can be ignored.

For both of the models the table shows the immediate effect (β) of the independent variables on the dependent variable, followed by the standard errors and significance levels, and also the long-run multiplier (k), followed by their standard errors and significances.³ The models show that while some variables have a significant immediate and a long-run effect (e.g. quotas), others (e.g. employment, district magnitudes) have a very small or no immediate effect, but a significant long-run effect. The results of the ADL and the LDV model are generally similar, but there are also some difference. For example, in the ADL model the district magnitudes have no significant short-run effect and the party system has no long-run effect. In the LDV model the both variables have long- and short-run effects. These differences arise because the LDV model is more restrictive – it forces all the independent variable to have the same speed of adjustment, even if theoretically some variables should have only an immediate and others only

³The long-run multipliers are calculated as $k = \frac{(\beta_0 + \beta_1)}{(1 - \alpha_1)}$, where β_0 is the coefficient on the independent variable, β_1 the coefficient on the lag of the independent variable (equal to zero in the LDV model) and α_1 is the coefficient on the lagged dependent variable. The standard errors for the long-run effect are calculated based on the variance and covariance matrix of the coefficients as shown in De Boef and Keele (2008).

TABLE 4. The ADL and the LDV model: short- and long-run effects

	ADL						LDV					
	β	SE		k	SE_k		β	SE		k	SE_k	
Intercept	3.350	1.873	*				3.568	1.830	*			
Female MP_{t-1}	0.884	0.032	***				0.874	0.030	***			
Log(DM)	0.759	0.576		5.682	2.295	**	0.722	0.168	***	5.718	1.901	***
ENPP	-0.426	0.200	**	-2.249	1.486		-0.293	0.126	**	-2.323	1.174	**
Party Quota	0.048	0.019	**	0.226	0.012	***	0.034	0.012	***	0.267	0.009	***
Legal Quota	0.077	0.030	**	0.741	0.084	***	0.083	0.021	***	0.654	0.049	***
Strict Legal Quota	0.082	0.044	*	0.802	0.091	***	0.094	0.029	***	0.743	0.047	***
Employment by development level												
Low	-0.013	0.219		-0.112	0.045	**	-0.014	0.025		-0.114	0.040	***
Medium Low	-0.055	0.248		0.044	0.094		0.011	0.036		0.085	0.080	
Medium High	0.062	0.241		0.262	0.082	***	0.036	0.034		0.284	0.071	***
High	0.314	0.263		0.803	0.133	***	0.088	0.048	*	0.694	0.107	***
Development level												
Medium Low	3.587	20.390					-1.123	2.556				
Medium High	-2.985	19.959					-2.484	2.378				
High	-22.458	21.632					-5.491	3.603				
Lagged variables												
Log(DM)	-0.099	0.575										
ENPP	0.165	0.205										
Party Quota	-0.022	0.021										
Legal Quota	0.009	0.039										
Strict Legal Quota	0.011	0.056										
Lagged employment by lagged development level												
Low	0.000	0.217										
Medium Low	0.060	0.244										
Medium High	-0.032	0.239										
High	-0.220	0.254										
Lagged development level												
Medium Low	-4.131	19.905										
Medium High	0.804	19.563										
High	16.019	20.710										
N		391										
R^2		0.899										
F -test							0.573	0.864				
BG test	5.343	0.021	**				3.088	0.079	*			

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The Breusch-Godfrey test statistic and the F -test are followed by the p -values.

a long-run effect. The ADL model allows more flexibility in the speed of adjustment because it includes the lags of the independent variables. It is possible to add more flexibility to the LDV model by including some lagged independent variables. For example, including the lagged effective number of parliamentary parties would allow the variable to have a faster adjustment speed.

In the rest of the dissertation I have opted for the LDV model as it is not different from the ADL model based on the F -test and is much simpler. We know that some substantive conclusions are slightly different and thus we should keep in mind that the LDV model is more restrictive.

Cross-sectional issues: panel heteroscedasticity and contemporaneous correlation

Heteroscedasticity. Panel heteroscedasticity refers to the case where the variances of the errors differ from unit to unit. Heteroscedasticity can be a by-product of model violations such as unaccounted sub-population differences and omitted variables. Under heteroscedasticity, the OLS coefficients are not biased, but the estimated variances may be so. Thus, the significance tests can lead to wrong conclusions. A solution exists in, first, determining the source of heteroscedasticity and trying to fix the model accordingly, and, secondly, using robust standard errors.

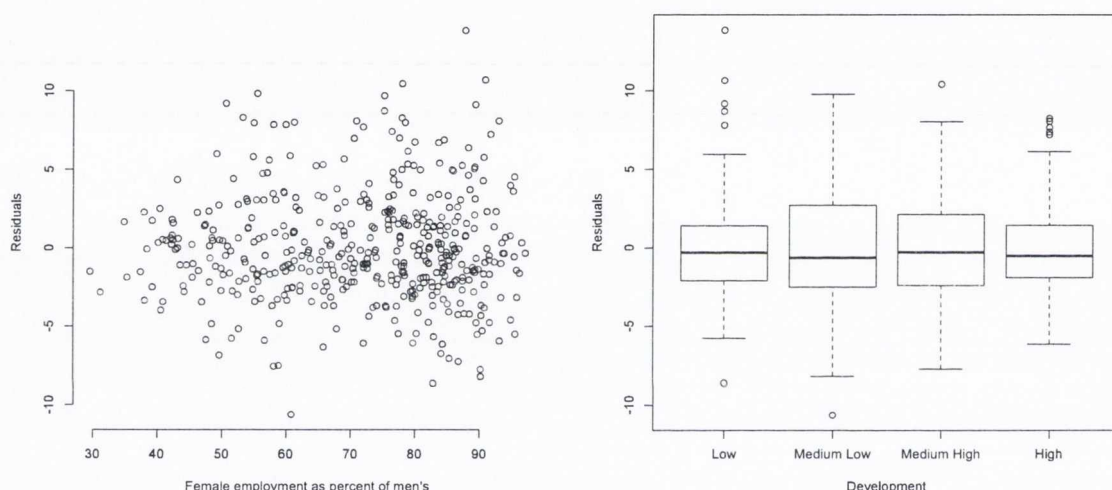


FIGURE 2. Heteroscedasticity in residuals

The basic model here exhibits some heteroscedasticity and, after analyzing multiple residual plots, the source for this appeared to be the relationship between female employment, development and representation. This is shown in figure 2, where the errors vary more for countries with medium levels of development and high female employment. Heteroscedasticity occurs here because our theory is much more complicated and the measures are unable to reflect it perfectly. We have hypothesized that female employment has an effect only when the job provides financial and social capital, and not when it is low-skill, low-wage labor. Because we do not have a measure that captures the nature of employment, we have assumed that development can reflect this – that women are more likely to be employed in high-skill jobs in developed nations and in low-skill jobs in less developed nations. Female employment and development attempt to tap into something that correlates generally well with our theoretical model, but fails in some cases. As a result we end up overestimating the effect employment has in some developed countries, where many women actually are not employed in the

TABLE 5. Heteroscedasticity robust standard errors

	β	SE		White 2	Arellano
Intercept	3.098	1.595	*	1.499	**
Female MP _{t-1}	0.851	0.028	***	0.031	***
Log(DM)	0.755	0.152	***	0.162	***
ENPP	-0.252	0.112	**	0.109	**
Party Quota	0.036	0.012	***	0.012	***
Legal Quota	0.097	0.021	***	0.021	***
Strict Legal Quota	0.103	0.029	***	0.030	***
Employment by development level					
Low	-0.008	0.022		0.023	0.018
Medium Low	0.019	0.033		0.037	0.023
Medium High	0.044	0.030		0.031	0.028
High	0.124	0.042	***	0.043	***
Development					
Medium Low	-1.589	2.306		2.512	1.401
Medium High	-2.915	2.106		1.998	1.700
High	-8.386	3.131	***	3.050	***
N		455			
R ²		0.884			
BP test	41.897	0.000	***		

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

high-skilled jobs, and underestimate the effect in some medium development countries, where women are employed in high-skill jobs.

Ideally, it would be preferable if we could fix the models and use a better measure. For the 75 countries here this is not possible. Our second option is to use robust standard errors and assess whether they make a difference in the results. Table 7 provides the basic model with the OLS and also a set of robust standard errors.⁴ When comparing the different standard errors, the focus should not necessarily be on whether the robust standard errors alter the significances, but on how much the standard errors change relative to the metric of the coefficient. In other words, is the change substantial in terms of how it effects our dependent variable (King and Roberts, 2012).

For most variables the change in the standard errors is visibly marginal and warrants no further elaboration. More differences in the standard erros are visible for the effect of development. As we just discussed, the relationship between development and employment is a weakness in the model and a primary cause of heteroscedasticity. Thus we should be more careful about the conclusions we make about development and employment, especially for the countries in the two medium development categories. To increase confidence in the data analysis to follow the papers will also show the heteroscedasticity consistent standard errors. In general though, the model results are not much affected by heteroscedasticity.

⁴I have used the White 2 and Arellano standard errors. The first of these is restricted to common variance inside every group and the latter allows for a fully general structure with respect to heteroscedasticity and also serial correlation (see Croissant and Millo (2008)).

Contemporaneous correlation. TSCS data may also be contemporaneously correlated. It is likely that changes in one country affect change in others, or, due to a common process or a shock in the system some social, political or economic processes move similarly across countries. The most common examples usually given are the dependence of the economy of one country on its neighbors and global economic upheavals. In both situations the economies of many countries change together in a very similar fashion. This can lead to the errors being contemporaneously correlated – the error of the cross section i at time t will be correlated with the error for the cross section j at time t .

In the case of women's political representation we might expect some level of contemporaneous correlation, but it is unlikely that this would be as important as in models that predict economic growth. As we have seen from the time-series plots of female MPs (e.g. Figure 1, page 19), some countries seem to be fairly impervious to major increases in representation in others. Theoretically the percent of women legislators in any two countries is not nearly as strongly connected as economic growth. While in the latter case the effect may be almost mechanic, in the case in point the effect really depends on value systems. We may imagine that in the multilateral relationships between the Nordic countries the level of women's representation is somewhat of an issue. However, it is less likely that one East European country would affect another country in the region in terms of women's representation. Some previous empirical work has also tested for common shocks – e.g. the effects of UN conventions (Paxton, 1997), Beijing declaration of the Fourth World Conference on Women in 1995 and EU initiatives on gender (Salmond, 2006) – but have found no effect.

The tests for contemporaneous correlation are appropriate for data with long T and small N , and are not possible to implement for large N with small T , which is the case here. Fortunately, if the time period is small the issue of contemporaneous correlation is itself smaller. But just as with heteroscedasticity, we can also use robust standard errors to check the reliability of our results. Beck and Katz (1995, 1996) have advocated the use of panel corrected standard errors (PCSE) to correct for both panel heteroscedasticity and contemporaneous correlation.

Before using PCSE with election data we have to cross some extra hurdles. Because some countries have elections every four-five, others every two-three years, the timing and spacing of elections varies between countries. As a result we do not have predefined cross-sections, that is, fixed moments of time when all countries hold elections. To facilitate the use of PCSE I defined cross-sections with 5 year intervals from 1980 to 2010 (seven in total). This, however, means that in countries with frequent elections there were more elections than panels (e.g. in USA). As a result some elections were “redundant” and not used in any panels.

TABLE 6. Comparison of OLS standard errors and panel corrected standard errors

	Panel definition 1					Panel definition 2				
	β	SE		PCSE		β	SE		PCSE	
Intercept	3.648	1.820	**	1.600	**	3.622	1.825	**	1.705	**
Female MPs	0.835	0.032	***	0.064	***	0.819	0.032	***	0.063	***
Log(DM)	0.869	0.173	***	0.203	***	0.956	0.173	***	0.200	***
ENPP	-0.304	0.123	**	0.099	***	-0.384	0.125	***	0.119	***
Party Quota	0.039	0.013	***	0.016	**	0.038	0.013	***	0.014	***
Legal Quota	0.080	0.023	***	0.033	**	0.083	0.024	***	0.033	**
Strict Legal Quota	0.094	0.034	***	0.032	***	0.118	0.031	***	0.030	***
Employment by development										
Employment	-0.006	0.025		0.023		-0.004	0.025		0.023	
Medium Low	0.020	0.036		0.021		0.011	0.036		0.021	
Medium high	0.041	0.034		0.020	**	0.045	0.034		0.019	**
High	0.141	0.047	***	0.058	**	0.141	0.047	***	0.054	**
Development level										
Medium Low	-2.162	2.535		1.395		-1.516	2.568		1.411	
Medium High	-3.284	2.383		1.359	**	-3.595	2.387		1.264	***
High	-10.126	3.531	***	4.277	**	-9.817	3.551	***	4.095	**
N		373					373			
R^2		0.884					0.886			
BG test		0.589	0.443				2.224	0.136		

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

To assure that the results would not be driven by the selected elections, I defined an alternate panel. Further, PCSE also require that all countries have at least one cross-section in common with all other countries. Because of this, four countries (Honduras, The Gambia, Zambia, Thailand) that held democratic elections in the 1980’s, but not later, had to be dropped – they had no cross-sections in common with the East European and many other new democracies.

Interestingly, while the use of PCSE is fairly common in the field of women’s representation, there is no discussion of panel definition. While Salmond (2006) did not discuss the issue explicitly, it is evident from his data set that he has used the same methods as just described. But it is also possible to define cross-sections so that the first election forms the first cross-section, the second election the second cross-section and so on. Some cross sections will then have fewer countries, but all elections will then be accounted for. The problem with that definition is that, all the later elections, for example the 5th elections, will not contemporaneous any more. In countries with elections every two years the 5th election would take place 10 years after the first and in those where elections are every four years, it would be 20 years later. In the end, correcting for contemporaneous correlation with not very contemporaneous cross-sections makes little sense. To maintain some uniformity in the election timing, the method described earlier is more suitable.

Table 6 provides the OLS and the PCSE for the two panel definitions. For the most part we can see that the PCSE are only slightly different from that of the OLS standard

errors and that they have little effect on the significance of the results. Also, the two alternate panels give very similar results, further improving confidence in the results. The differences are visible again for development and also for female employment. Because PCSE do not alter the main conclusions and can be substituted with the heteroscedasticity robust standard errors that do not require any extra steps before implementation, I have decided not to use PCSE in this dissertation.

Heterogeneous units

Unit heterogeneity arises when the units of analysis, e.g. countries, differ in ways that are not explained by the independent variables in the model. That is, some countries have consistently higher (or lower) values on the dependent variable and we cannot account for this difference with any independent variables. Ignoring unit heterogeneity leads to omitted variable bias.

Fixed effects models (FEM) are frequently used to account for heterogeneity, but, given the data structure of this dissertation, this option is not viable. First, many variables of interest (such as party systems) do not vary over time or are slow moving. The effect of these variables cannot be estimated while using fixed effects. Further, LDV models with fixed effects lead to biased results. The bias is largest when the time-series is short, which, unfortunately, is the case here. While some cautiously suggest using a LDV with fixed effects (Wilson and Butler, 2007), others are strictly against (Angrist and Pischke, 2009). Fortunately, in most cases when we have already accounted for LDV, we do not need fixed effects. In pooled models without the lagged dependent variable researchers may find the need for fixed effects because they have misspecified the dynamics of the model (Beck and Katz, 2001). Angrist and Pischke (2009) also argue that the LDV and the FEM together have a bracketing effect. If the LDV model is correct and one estimates the FEM, the effects will be overestimated. In the reverse case, if FEM is true and LDV is estimated, the effects will be underestimated. According to the authors, the truth will be then between the two estimates.

Another way to account for unit heterogeneity is to use a random effects model (REM). Random effects would help us avoid the problem of estimating the effects of slow moving variables. But it is debatable whether random effects can be estimated without problems using the LDV specification. Angrist and Pischke (2011) argue that REM should not be used with LDV, but Beck and Katz (2011) suggest that random effects would not lead to bias in dynamic models.

To compare and assess the possible bias of the various specification Table 7 presents a number of different model specifications along with some test statistics. The table first shows the two models that include the lagged dependent variable. The estimated coefficients and significances of the LDV and the LDV + REM are nearly identical. If

TABLE 7. Random and fixed effects models with and without the lagged dependent variable

	LDV			LDV + REM			REM			FEM		
	β	SE		β	SE		β	SE		β	SE	
Intercept	3.098	1.595	*	3.229	1.698	*	5.822	4.661		-3.748	14.796	
Female MP	0.851	0.028	***	0.825	0.030	***						
Log(DM)	0.755	0.152	***	0.826	0.162	***	2.363	0.356	***	2.077	0.545	***
ENPP	-0.252	0.112	**	-0.272	0.117	**	-0.241	0.206		-0.128	0.235	
Party quota	0.036	0.012	***	0.039	0.012	***	0.124	0.018	***	0.101	0.020	***
Legal Quota	0.097	0.021	***	0.101	0.021	***	0.188	0.030	***	0.172	0.032	***
Strict Legal Quota	0.103	0.029	***	0.110	0.030	***	0.395	0.035	***	0.349	0.038	***
Employment by development												
Low	-0.008	0.022		-0.007	0.023		0.013	0.062		0.257	0.161	
Medium Low	0.019	0.033		0.022	0.035		0.173	0.085	**	0.029	0.180	
Medium High	0.044	0.030		0.050	0.032		0.373	0.075	***	0.263	0.170	
High	0.124	0.042	***	0.142	0.044	***	0.707	0.082	***	0.493	0.171	***
Development level												
Medium Low	-1.589	2.306		-1.720	2.453		-10.136	6.282		2.584	15.552	
Medium High	-2.915	2.106		-3.339	2.238		-23.553	5.435	***	-12.411	14.985	
High	-8.386	3.131	***	-9.521	3.306	***	-47.267	6.252	***	-31.292	15.216	**
N		455			455			455			455	
R^2		0.891			0.877			0.657			0.891	
BIC		2516			2495			2605			2964	
BG	0.451	0.502		2.102	0.147		63.020	0.000	***	34.134	0.000	***

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
Fixed and random effects not shown.

the random effects bias the LDV specification, it certainly is not visible, and using the random effects make no difference to the results. The explanatory power of the two models is also similar.

The table then shows the REM and FEM, i.e. the models without the lagged dependent variables. The two give fairly similar results to each other, but the sizes of the coefficients of the REM and FEM are for the most part much higher than those of the LDV and LDV + REM. In other words, choosing the FEM and REM we might overestimate the effects of the independent variables. We can also see that the REM and FEM models estimate the effect of the effective number of parliamentary parties to be not significant. This is likely caused by the inclusion of country effects in both models – party systems do not vary much within countries and are collinear with the unit (country) effects. We do not see this affecting the district magnitudes as the variable does not correlate as strongly with unit effects because many countries can have a similar electoral system, e.g. use SMD. Based on R^2 the REM has a weaker fit than all other models. The FEM has a high R^2 , which is to be expected as we have used 75 dummy variables. However, based on the BIC criteria, which penalizes for additional controls, the FEM fares worst. The two models without the lag also have high residual serial correlation (the Breusch-Godfrey test statistic is significant). Because the two models show such high serial correlation in the residuals, the estimates will be biased. We should not trust these large effects and reject both the REM and FEM.

of development and possibly also employment. Because of this the papers will also include heteroscedasticity robust standard errors.

We also found based on cross-validation that the model cannot capture some idiosyncratic factors, but also that the model estimates are not consistently better or worse for either the developed or less developed countries nor for any specific region. This adds confidence that our basic model fits well with many types of democracies. If we wished to account for the remaining heterogeneity our best option would be to use the random effects together with the lagged dependent variable. The use of REM or FEM without the dynamic specification will, however, be biased and lead to the overestimation of coefficients.

List of major electronic sources

General and regional sources

<http://www.quotaproject.org/>
<http://www.un.org/womenwatch/osagi/feature/postconflict/Refpolitical.htm>
<http://www.nsd.uib.no/macrodataloguide/source.html>
<http://sedlac.econo.unlp.edu.ar/eng/index.php>
http://www.wider.unu.edu/research/Database/en_GB/database/
<http://www.developmentdata.org/inequality.htm>
http://www.ilo.org/empelm/what/WCMS_114240/lang--en/index.htm
<http://electionguide.org/>

Americas

<http://www.iadb.org/en/research-and-data/research-data,1612.html>
<http://pdba.georgetown.edu/>
<http://websie.eclac.cl/infest/ajax/cepalstat.asp?carpeta=estadisticas&idioma=i>

Eastern Europe

<http://www2.essex.ac.uk/elect/database/legislation.asp>

Europe

<http://www.parties-and-elections.de/>

National sources

Argentina

<http://www.hcdn.gov.ar/>
<http://psephos.adam-carr.net/countries/a/argentina/>

Australia

http://www.aec.gov.au/Elections/Federal_Elections/

Austria

http://www.bmi.gv.at/cms/BMI_wahlen/nationalrat/start.aspx

Barbados

<http://www.eclac.org/publicaciones/xml/2/7812/G0652.html#2.4%20Income%20inequality%20and%20poverty>

Belgium

<http://polling2010.belgium.be/en/>
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Estonia

www.vvk.ee

Finland

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Ghana

<http://www.ec.gov.gh/node/63>

Guyana

<http://www.gecom.org.gy/pastresults.html>

India

http://eci.nic.in/eci_main1/ElectionStatistics.aspx

Korea (Republic of)

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Latvia

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