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# Welfare state and representation: Do women make the welfare state or does the welfare state make women representatives?

# Abstract

The relationship between welfare states and women's representation in parliaments has been of great interest to scholars. However, different strands of the literature on gender and political representation suggest opposing directions of causality. On the one hand it is argued that a rise in welfare spending increases women's representation in parliaments, but on the other hand, more women in parliaments is said to expand welfare spending. This paper analyses the problem empirically and finds that the lagged values of women's parliamentary representation are better predictors of welfare spending than the lagged values of spending are of women's percent in parliaments. In other words, women make the welfare state and welfare spending does not make female representatives.

**Keywords**: welfare spending, causality, parliamentary representation, legislative behaviour, gender

# 1    Introduction

Research on women's political representation is interested in both the *causes* of high or low numeric representation of women in parliaments and the *consequences* to policy outcomes of that representation. Thus, on the one hand researchers try to explain what affects the percent of women elected to parliament. What are the barriers to equal representation, what effect do electoral system, party recruitment processes, resources and/or welfare regimes have on women's electoral success? But on the other hand researchers are also interested in whether female legislators make a difference for women – whether female representatives vote differently from their male counterparts and support or initiate legislation beneficial to women. In other words, once elected, do women also act for women.

Both literatures are interested in how women's representation relates to welfare states. Scholars who try to explain women's numeric representation in parliaments claim that welfare state spending and/or ideology can improve women's socioeconomic status, and thereby increase their representation in elected office. However, work on legislative behaviour has found that female representatives are more supportive of welfare expansion than men. Thus, an increase in female representatives can increases welfare spending. The two literatures propose opposite causal paths – does the welfare state make women representatives or do women make the welfare state?

In the following pages I will review the literature on the relationship between welfare states and women's representation in parliaments, outlining the causal arguments and empirical evidence of both sides. The paper will then analyse the issue of causation empirically using the Granger causality test and structural equation modelling. The evidence presented here supports the argument that the percent of female legislators has an effect on certain types of welfare spending, but not the other way around. For this reason including welfare spending in models predicting women's seat shares in legislatures is highly endogenous.

It should be noted that this work is limited to democracies and makes no claims about how women's representation in parliaments and welfare state spending are related in non-

democratic countries. The theories connecting welfare state and women's representation assume that the representatives are responsive to voters demands and individuals can choose to run for office in free and fair elections. If this is not the case, as in many non-democratic countries, the theoretical expectations will not hold.

## 2   Welfare state and representation

Researchers interested in explaining the percent of women in parliaments (descriptive representation) have argued that women's economic power and parity with men are precursors for female political representation (Iversen and Rosenbluth 2008; Kunovich and Paxton 2005; Oakes and Almquist 1993; Stockemer and Byrne 2011). Modernization and female participation in the labour force spur on social change – as cultural norms become more egalitarian, women become more active participants in the public sphere (Matland 1998; Moore and Shackman 1996). 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 addition, as development often increases female employment it leads to improved skills and financial resources. Money and skills are necessary to launch a successful campaign and voters evaluate candidates' ability based on previous professional achievements. As the presence of women among the pool of eligibles increases, so should the number of female legislators (Darcy et al. 1994; Kenworthy and Malami 1999; Oakes and Almquist 1993).

The empirical findings on the relationship between female employment and representation are inconclusive and scholars have pursued more nuanced theories to make sense of the conflicting evidence. For example, some have argued that in the less developed countries women are overwhelmingly employed at subsistence level low-skill jobs and labour 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.

Others have however suggested that welfare states interfere with the socioeconomic predictors, such as employment, and can affect women's representation. It has been shown that government spending (Rosenbluth et al. 2006; Rule 1987; Thames and Williams 2010), welfare regime type (Siaroff 2000) or indicators of both (McDonagh 2010) can have an effect on the percent of women in parliaments. The causal mechanisms proposed by the different authors are quite varied. Broad statements have been made about the empowering effect of welfare states. Accordingly, this is why we find more female legislators in Scandinavia (Paxton 1997) and why social democratic welfare regimes are associated with more female MPs (Krook 2010; Siaroff 2000).

Some provide more nuanced theories. Rosenbluth et al (2006) argue that certain types of welfare states may pressure parties into recruiting female candidates. Welfare states in Scandinavia are employing women to fill care roles (e.g. childcare) that were previously provided by women's unpaid labour. This has produced a gender gap in public sector employment, which in turn has also created an ideological gender gap. Women are more leftist and more likely to support the welfare state than men. The authors argue that in this context the parties find it beneficial to run and support female candidates as they might be seen as a safeguard of the welfare state. By contrast, in welfare regimes where women's welfare benefits are related to that of their husband's, 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.

Finally, welfare states can also change the way voters view female candidates. By adopting welfare policies the state lets voters know that maternal or caring attributes are located in the public domain, leading voters to view women as suitable political leaders (McDonagh 2010). Rule (1987) 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. Voters and recruiters are more receptive to female candidates in social welfare context. In both cases welfare policies are a way for the state to cultivate favourable voter attitudes towards female politicians.

The above description of the relationship between welfare states and representation

conflicts with research interested in the effect female legislators have on policy output. Multiple studies have shown that gender affects representatives' attitudes and their legislative behaviour (initiation and/or sponsorship of bills) on a diverse range of issues (Celis 2006; Lovenduski and Norris 2003; Norris and Lovenduski 1993; Swers 1998; Thomas 1994; Vega and Firestone 1995). Female representatives can and do represent women's interests (e.g. provide substantive representation).

With respect to welfare states specifically, Wängnerud (2000) shows that female MPs in Sweden are more likely to consider social welfare both as an area of professional interest and a campaign issue. These results hold after taking account of other personal characteristics (age, education) and party ideology. In both Finland and in Estonia women are more likely than men to sponsor a bill on a social issue (Solvak 2011) and in the United States female state legislators have more liberal attitudes towards welfare state policies (Poggione 2004). Poggione 2004 also finds that the effect of gender on legislators' attitudes remains significant and substantial even after controlling for party, ideology, characteristics of the district and the representative (e.g. race and religion).

Support for the effect of gender on MPs' attitudes and behaviour towards social policy issues is mostly based on single country analysis, with some research also providing comparative evidence from a small number of countries (Narud and Valen 2000; Schwindt-Bayer 2006; Wängnerud 2000b). 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, controlling for government ideology. 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. Again, these results hold after controlling for party ideology.

The reason for women's support of the welfare state might be their different life experiences from men and women's structural position in the society. The gendered division of labour and traditionally female caregiving roles can have an impact on attitudes about equality. For this reason women are more likely to support policies that increase equality,

may it be affirmative action or greater social justice (Kittilson 2011). In addition women's experiences also lead them to raise new policy issues that are important to women. These may include policies to combat violence against women (Goetz 1998), or improve women's access to the labour market and provide ways to balance family and working life (Celis 2006). Both lines of arguments suggest that women have a greater interest in supporting the welfare state, to enhance equality and respond to issues relating to family life.

**Note that most of these different theories centre on the childcare and work-life balance aspects of the welfare state. Women either directly or indirectly benefit from childcare and thus become more successful in their bid for office, or women as representatives support the expansion of state funded care because they have a greater interest in this compared to men.**

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 on the development of the welfare state (Huber and Stephens 2001, pp. 125-126). Regardless of the initial developments, today the reciprocal relationship cannot be dismissed.

# 3 Welfare spending and representation: the empirical relationship

## 3.1 Data and variables

I analyse the empirical relationship between women's representation and welfare state using the Granger Causality test and structural equation modelling. 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.[1] **All data on social expenditure is from the OECD Social Expenditure Database (SOCX) 1980-2011-2014 (OECD 2015). I have used the in kind family spending as a percent of GDP to measure welfare state regime type. The in kind family benefits cover public spending on services such as day care and home-help services while the cash benefits cover family, maternity, paternity allowances, income support during leave, sole parent payments and other child allowances and credits. SOCX data has been adjusted the indicators for cross-national differences in the compulsory age of entry into primary school (Adema and Ladaique 2009).**

Previous research has also used government spending or total social spending as a percent of GDP to measure welfare state regimes. But as some authors admit, these measures are not without problems and have been used due to the lack of a better alternative at the time (Rosenbluth et al. 2006). A preferred measure in this context is social service (in kind) spending (Bolzendahl and Brooks 2007), which most closely reflects the causal mechanisms.

Table 1 shows the averages for the different types social and family spending by welfare regime type. Total and cash social spending and cash family spending are similar in both conservative and social democratic regimes, but both types of in kind spending are higher in social democratic regime compared to the conservative and other regimes. Table 1 supports the idea that the crucial difference between welfare regimes is not about how much is spent, but in how the spending is done (Esping-Andersen 1990; Huber and Stephens 2000).

[TABLE 1 HERE]

The table also shows the average percent of seats held by women in the lower or the single house of the parliament. The percent of women in parliaments is nearly twice as large in the social democratic regimes compared to

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[1] A list of countries and some descriptive data is provided in the appendix. Data will be available from the author upon request.

all the other welfare regime types. The liberal regimes have, on average, the fewest representatives with the other and conservative regimes just slightly ahead. The percent of female representatives correlates strongly with in kind family and social spending (coefficients 0.69 and 0.67 respectively), for total family and social spending the association is weaker (0.62 and 0.55 respectively). The below models use in kind family spending because it both suits best theoretically and has the strongest empirical relationship with female representation. All variables are measured at election years.

The focus of this paper is comparing two sets of causally opposing hypotheses on welfare spending and women's representation in parliaments:

1. Increase in the percent of female representatives increases in kind family spending.

2. Increase in the in kind family spending increases the percent of female representatives.

Section 2 showed that researchers have argued and provided empirical support for both of these, but have not raised the issue of endogeneity and compared the competing hypothesis empirically at the same time using panel data. The purpose of this paper is to do exactly that.

## 3.2   Granger causality

The Granger causality test rests on the idea that if an event $A$ happens before event $B$, it is possible for $A$ to have caused $B$, but it is impossible for $B$ to have caused $A$ because time does not run backward. This idea can be used to test for the possibility of causation between two time series. The Granger causality test basically consists of two sets of regressions. The first of these regresses $B$ on the lagged values of $B$ and then compares it to a model where the lagged values of $A$ are also added. If the lagged values of $A$ improve model fit and have a significant effect on $B$ we can say that event $A$ is useful in predicting event $B$, or $A$ Granger caused $B$. The second set of models regresses $A$ on

the lagged values of $A$ and then adds the lagged values of $B$ in the next model. Again, if the lagged values of $B$ improve model fit and have a significant effect on $A$ then $B$ Granger causes $A$.

Table 2 shows the regression models and the results of the $F$-tests. **The Chi-Square statistic from the Breusch-Godfrey test for autocorrelation in panel models is also shown. The test shows no AR(1) correlation in the residuals.** The first set of models test whether the lagged value of female members of parliaments (female $MP_{t-1}$) can predict in kind family spending. We can see that lagged value of family spending can explain 92.3% of the variation in its current value. Adding the lagged value of women's representation increases the $R^2$ to 92.7% and the $F$-test shows the increase is significant. The coefficient for lagged value of female MPs is also statistically significant. This means that the lagged value of women's representation improves model fit and should be included as an explanatory variable – women's representation Granger causes in kind family spending.

The second set of regressions shows the effect of lagged family spending on representation. This time we see that adding lagged in kind family spending to the restricted model does not have a statistically significant effect on the overall explanatory power – $R^2$ is not increased and the $F$-test is not significant. The coefficient for lag of family spending itself is also not significant. Welfare spending does not Granger cause women's political representation. In sum, the Granger causality test suggest that it is possible that the female representatives make the welfare state, but in kind family spending does not increase women's representation.

[TABLE 2 HERE]

I also tested whether including the ideological composition of the parliament affected above findings. It is possible that both high women's representation in the parliament and high in kind family spending are both results of a large number of representatives belonging to left-wing parties. I added lagged values of the percentage of left parties' legislative seats to both sets of models. The data is from Swank (2013) and cover 21 of the 33 OECD countries, excluding all new democracies, Iceland, Luxembourg and Israel.

The dataset includes a variety of variables on the ideological composition of the parliament and government, including the percent of left party cabinet portfolios, percent of left party legislative seats and percent of left party legislative votes. Of the different variables the percent of left party legislative seats correlated the strongest with in kind family spending and female representation.

The inclusion of left party seats in the model predicting in kind family spending improved model fit only slightly and the variable itself fell below significance. Most importantly, the inclusion of left party seats did not change the size and significance of the effect female representation has on in kind spending. In the models explaining female representation the addition of the new variable had no real effect on the model fit, nor on the coefficients of the other variables. The results are presented in the Appendix Table 5.

## 3.3 Structural equation modelling

The second empirical test explored here, structural equation modelling, allows the estimation of endogenous systems – i.e. equations where one variable could at the same time be an independent and a dependent variable. Because structural equation modelling (SEM) is often called causal modelling some take it as a test of causality. I emphasize that SEM, like the Granger causality test, cannot in and of itself determine causality, and is a test of association. But just as with the Granger test, we can determine with statistical analysis how strong is the evidence for or against any of the causal structures.

With the models presented here I test the strength of three different causal paths. As before, I hypothesize that women's representation affects welfare spending, and that welfare state spending influences women's political representation. In addition, I also allow for a third causal path by which welfare states affect female employment and female employment in turn impacts women's representation. I have added this to see whether welfare states have an indirect effect on representation. Also, legislators cannot directly increase female employment so the risk of endogeneity would be lower in this case. Female labour force participation is measured as women's employment as a percent of men's. The correlation between female employment and representation in parliament is about 0.64.

The relationship between employment and in-kind family spending is just as strong (correlation coefficient 0.64), but with total social and family spending it is weaker (coefficients 0.41 and 0.56 respectively).

I analyse the significance 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 ($S_{t-1}$) is allowed to influence in-kind family spending at the current election year ($S_t$) 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) women's representation affects in-kind family spending, (2) welfare states have an independent direct effect on representation, and, (3) welfare states influence representation through employment. The models A, B and C are nested in the full model – they have the same variables, but fewer paths. In model A I have omitted the direct effect of family spending on women's representation ($S_{t-1} \rightarrow W_t$ omitted). Model B omits the effect of employment on women's representation ($E_t \rightarrow W_t$). Lastly, model C omits the effect of women's representation on family spending ($W_{t-1} \rightarrow S_t$).

The grey double-headed arrows reflect covariation.[2] The model does not specify what caused women's representation or in kind family spending at the previous election, but we

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[2]Because 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.

know that the two variables correlate. Also, women's employment should be correlated with representation at the previous election. Without specifying these 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 of this article is not necessarily to determine the size of the effect explanatory variables have on the dependent variable, but to see whether removing any of the effects is justified.[3]

## 3.4 Results from SEM

The results of the models for all OECD countries are presented in Table 3. 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. Structural equation modeling has a strong focus on 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 model fit is assessed by looking at the chi square, root mean square error approximation (RMSEA) and goodness of fit index (GFI). The 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 for any added parameters (path coefficients and covariances). A RMSEA below 0.05 shows a good model fit. The goodness of fit index should be above 95% for good model fit.[4]

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

[4]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. See (Schumacker and Lomax 2004, p. 100) and (Bowen and Guo 2012, pp. 141-146) for more details.

The Full model shows a reasonable fit, but we can also notice that models A and B are not worse. 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 marginal and 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. Substantively, these data and models again suggest that in kind family spending does not affect 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 effect of women's representation on family spending from the equation. As suggested by scholars interested in the effects of gender on legislative behaviour, women's representation has a positive effect on in-kind family spending. The model coefficients show that a 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% point increase would mark a sizeable growth in spending in those countries. The size of the effect is the same in the Granger causality test. However, since the models are likely to omit other relevant explanations we should be very cautious about taking this effect at its face value.

Table 3 also shows that female employment does not have a significant effect on women's representation. The effect of female employment on representation may be contingent on the types of employment taken up by women and the effect might be weaker or even absent in newer democracies. To analyse this, I also ran the same four models on the 24 older OECD members. The results are shown in Appendix Table 6. While the size of the coefficient on employment is more than double compared to the results in Table 3, the effect still falls below conventional significance levels. Other results were nearly identical. The full model shows again a reasonable fit. Model C has a very poor fit and should be rejected, meaning that the effect of women's parliamentary representation on in kind family spending should not be removed from the model. Model A shows the

best fit; excluding the direct effect of family spending on representation has no significant consequences to model fit.

The two tests performed here suggest that there is no evidence of the direct effect of welfare states, specifically in kind family spending, on the percent of women in national parliaments. 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 clearly highlight the problem of endogeneity in the literature concerned with studying women's numeric representation parliaments. 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 spending. Using direct legislative outcomes (e.g. welfare spending) to predict representation is highly problematic because these outcomes are decided on by representatives themselves.

## 4   Conclusions

Scholars of women's political representation have studied both the causes of high or low numeric representation in parliaments and the consequences to policy outcomes of that representation. These two strands of literature have been interested in how representation is respectively influenced or influences welfare state spending. On the one hand it is argued that welfare state ideology and/or spending can increase the representation of women in parliaments. But on the other hand, higher welfare spending has been seen as a result of women's election to parliaments. While the arguments of both sides seem well reasoned and empirically supported, they clearly point to opposing directions of causality. In this paper I have explored the issue empirically using the Granger causality test and structural equation modelling.

The empirical findings presented here strongly suggest that while women's parliamentary seat shares make for a good predictor of in kind family spending, spending does not predict women's percent in parliaments. In other words, women make the welfare states rather than the welfare state making women representatives. For the research on welfare states and women's descriptive representation this should warrant some pause for

thought. Welfare state spending, a direct outcome of legislative action, is endogenous to representation and cannot be used as its predictor.

However, the point here was not to say that welfare states are unimportant for women, or for their political representation. Welfare spending is associated with many macro level outcomes, such as socioeconomic inequality and poverty, and even affect very private decisions, such as if and when to have children, or whether to move to another country. Indeed, the various effects of welfare states permeate through our lives in so many ways that it is almost impossible to say that it does not affect representation. The real question is how they matter, and to identify the particular aspects and outcomes that are the most relevant for women's representation. For example, welfare states with higher spending on childcare services are associated with increased female employment levels, which in turn can affect women's political participation and representation. Thus, welfare states may have an indirect impact on women's legislative seat shares by shaping their socioeconomic position.

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Table 1: Public spending and female representation by welfare regime

| Type of spending | Social Democratic | Conservative | Liberal | Other |
|---|---|---|---|---|
| Total social spending | 24.2 | 22.7 | 16.1 | 16.0 |
| In kind | 10.3 | 7.3 | 7.0 | 5.2 |
| Cash | 13.0 | 14.8 | 8.8 | 10.5 |
| | | | | |
| Total family | 3.3 | 2.1 | 1.5 | 1.2 |
| In kind | 1.6 | 0.6 | 0.4 | 0.4 |
| Cash | 1.6 | 1.5 | 1.2 | 0.8 |
| | | | | |
| Percent female MPs | 32.5 | 17.8 | 12.7 | 13.9 |

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

Table 2: Granger causality tests between women's representation and in kind family spending

| | DV: In-kind family spending (First set of hypothesis) | | | | | | DV: Percent female representatives (Second set of hypothesis) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value |
| Intercept | 0.087 | 0.012 | *** | 0.045 | 0.015 | *** | 2.430 | 0.373 | *** | 2.444 | 0.372 | *** |
| Family spending$_{t-1}$ | 0.981 | 0.019 | *** | 0.926 | 0.022 | *** | | | | 0.407 | 0.400 | |
| Female MP$_{t-1}$ | | | | 0.004 | 0.001 | *** | 0.977 | 0.018 | *** | 0.963 | 0.020 | *** |
| | | | | | | | | | | | | |
| Breusch-Godfrey test | | 0.263 | | | 0.753 | | | 1.157 | | | 0.788 | |
| $N$ | | 227 | | | 227 | | | 227 | | | 227 | |
| $R^2$ | | 0.923 | | | 0.927 | *** | | 0.932 | | | 0.932 | |

Note: *** $p < 0.01$, ** $p < 0.05$. $R^2$ is followed by the significance level of the $F$-test. The standard errors are based on White's heteroskedasticity-consistent covariance matrix estimation from the plm package (Croissant and Millo 2008).

Table 3: Structural equation models of women's representation in 33 OECD countries

| | Full model All causal paths | | | Model A $S_{t-1} \to W_t$ omitted | | | Model B $E_t \to W_t$ omitted | | | Model C $W_{t-1} \to S_t$ omitted | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ | SE | | $\beta$ | SE | | $\beta$ | SE | | $\beta$ | SE | |
| DV: Family in kind benefits | | | | | | | | | | | | |
| Family$_{t-1}$ | 0.915 | 0.026 | *** | 0.915 | 0.026 | *** | 0.915 | 0.026 | *** | 0.972 | 0.021 | *** |
| Female MP$_{t-1}$ | 0.004 | 0.001 | *** | 0.004 | 0.001 | *** | 0.004 | 0.001 | *** | | | |
| | | | | | | | | | | | | |
| DV: Percent of women in parliament | | | | | | | | | | | | |
| Female MP$_{t-1}$ | 0.967 | 0.027 | *** | 0.970 | 0.024 | *** | 0.975 | 0.025 | *** | 0.968 | 0.028 | *** |
| Family$_{t-1}$ | 0.113 | 0.532 | | | | | 0.261 | 0.497 | | 0.111 | 0.554 | |
| Employment | 0.017 | 0.022 | | 0.019 | 0.021 | | | | | 0.017 | 0.022 | |
| | | | | | | | | | | | | |
| DV: Employment ratio | | | | | | | | | | | | |
| Family$_{t-1}$ | 14.538 | 1.177 | *** | 14.541 | 1.177 | *** | 14.538 | 1.181 | *** | 14.538 | 1.206 | *** |
| | | | | | | | | | | | | |
| $N$ | 217 | | | 217 | | | 217 | | | 217 | | |
| $\chi^2$ | 1.166 | 0.558 | | 1.210 | 0.750 | | 1.726 | 0.631 | | 10.473 | 0.015 | ** |
| RMSEA | 0.000 | (0.000, 0.115) | | 0.000 | (0.000, 0.079) | | 0.000 | (0.000, 0.093) | | 0.107 | (0.042, 0.182) | |
| GFI | 0.998 | | | 0.998 | | | 0.997 | | | 0.903 | | |

Note: *** $p < 0.01$, ** $p < 0.05$. 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.
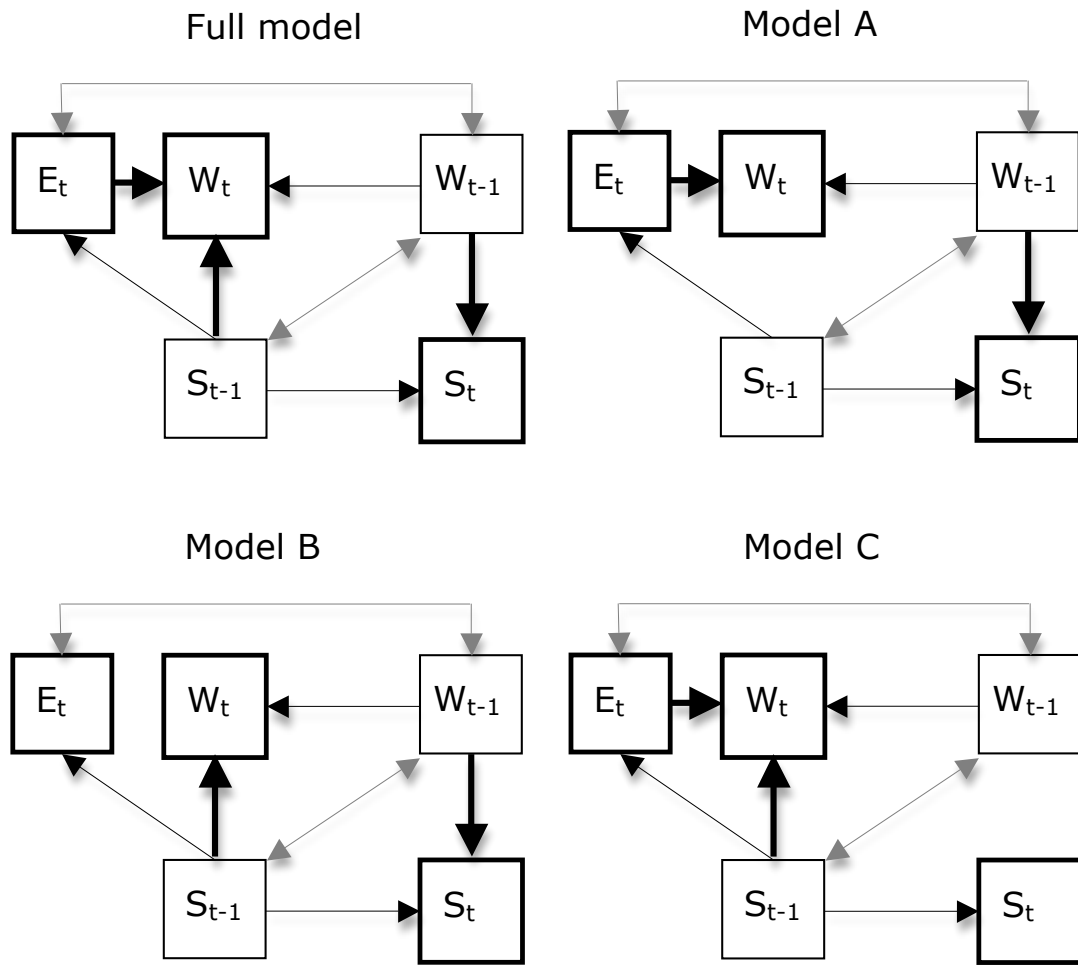
Figure 1: Path models of women's representation and family spending.
*$W_t$ – women in the parliament at current election (percent), $W_{t-1}$ – women at a previous election, $S_t$ – spending on in kind family benefits, $S_{t-1}$ – spending on in kind family benefits at a previous election, $E_t$ – female employment.*

# Appendix

Table 4: Welfare states, employment and representation in parliament, OECD nations 1980-2012

| Country | New democracy | Welfare state type | In kind family spending | Female employment | Percent female MPs |
|---|---|---|---|---|---|
| Sweden | | social | 2.1 | 93.6 | 36.1 |
| Norway | | social | 1.1 | 86.3 | 34.4 |
| Finland | | social | 1.3 | 91.8 | 34.2 |
| Denmark | | social | 2.0 | 88.3 | 32.4 |
| Netherlands | | conservative | 0.7 | 72.6 | 27.4 |
| Iceland | | social | 1.3 | 90.9 | 23.3 |
| Mexico | Yes | other | 0.6 | 51.2 | 22.4 |
| New Zealand | | liberal | 0.4 | 77.8 | 21.9 |
| Austria | | conservative | 0.4 | 74.5 | 21.9 |
| Germany | | conservative | 0.6 | 73.7 | 21.6 |
| Belgium | | conservative | 0.5 | 71.2 | 19.5 |
| Spain | | other | 0.3 | 58.3 | 19.1 |
| Switzerland | | conservative | 0.2 | 78.3 | 18.8 |
| Estonia | Yes | other | 0.3 | 86.8 | 17.5 |
| Poland | Yes | other | 0.3 | 82.0 | 17.2 |
| Czech Republic | Yes | other | 0.4 | 79.2 | 16.9 |
| Canada | | liberal | 0.1 | 81.9 | 16.3 |
| Luxembourg | | conservative | 0.4 | 64.0 | 15.7 |
| Slovakia | Yes | other | 0.3 | 80.4 | 15.6 |
| Australia | | liberal | 0.4 | 73.5 | 14.3 |
| Portugal | | other | 0.2 | 74.9 | 14.2 |
| Italy | | conservative | 0.4 | 59.8 | 12.4 |
| Slovenia | Yes | other | 0.6 | 87.7 | 11.8 |
| United Kingdom | | liberal | 0.7 | 78.7 | 11.6 |
| Chile | Yes | other | 0.3 | 50.5 | 11.0 |
| USA | | liberal | 0.4 | 80.7 | 10.4 |
| Israel | | conservative | 1.1 | 75.5 | 10.3 |
| Ireland | | liberal | 0.3 | 56.3 | 9.5 |
| Hungary | Yes | other | 1.2 | 79.0 | 9.3 |
| France | | conservative | 0.9 | 78.3 | 9.1 |
| Greece | | other | 0.3 | 60.6 | 7.5 |
| Korea | Yes | other | 0.2 | 68.7 | 7.3 |
| Japan | | liberal | 0.3 | 68.6 | 4.7 |

Note: Data for new democracies from 2000. Data is ordered by percent of female MPs.

Table 5: Granger causality tests between women's representation and in kind family spending, controlling for left seats

| | DV: In kind family spending | | | | | | | | | DV: Percent female representatives | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value | $\beta$ | SE | $p$-value |
| Intercept | 0.080 | 0.017 | *** | 0.041 | 0.022 | | 0.011 | 0.030 | | 2.368 | 0.401 | *** | 2.394 | 0.402 | *** | 1.917 | 0.549 | *** |
| Family spending$_{t-1}$ | 0.979 | 0.020 | *** | 0.925 | 0.028 | *** | 0.922 | 0.028 | *** | | | | 0.414 | 0.517 | | 0.369 | 0.517 | |
| Female MP$_{t-1}$ | | | | 0.004 | 0.001 | *** | 0.003 | 0.001 | ** | 0.983 | 0.018 | *** | 0.968 | 0.026 | *** | 0.962 | 0.026 | *** |
| Left seats$_{t-1}$ | | | | | | | 0.001 | 0.001 | | | | | | | | 0.016 | 0.013 | |
| | | | | | | | | | | | | | | | | | | |
| Breusch-Godfrey test | | | | | | | | | | | | | | | | | | |
| $N$ | | 182 | | | 182 | | | 182 | | | 182 | | | 182 | | | 182 | |
| $R^2$ | | 0.931 | | | 0.934 | *** | | 0.935 | | | 0.943 | | | 0.943 | | | 0.943 | |

Notes: *** $p < 0.01$, ** $p < 0.05$. $R^2$ is followed by the significance level of the $F$-test.

The data covers 21 OECD countries of the 33 (excluded are all new democracies, Iceland, Luxembourg and Israel).

Table 6: Structural equation models of women's representation in 24 OECD countries

| | Full model All causal paths | | | Model A $S_{t-1} \to W_t$ omitted | | | Model B $E_t \to W_t$ omitted | | | Model C $W_{t-1} \to S_t$ omitted | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ | SE | | $\beta$ | SE | | $\beta$ | SE | | $\beta$ | SE | |
| **DV: Family in kind benefits** | | | | | | | | | | | | |
| Family spending$_{t-1}$ | 0.927 | 0.030 | *** | 0.928 | 0.030 | *** | 0.927 | 0.030 | *** | 0.980 | 0.024 | *** |
| Female MP$_{t-1}$ | 0.004 | 0.002 | ** | 0.004 | 0.002 | ** | 0.004 | 0.002 | ** | | | |
| | | | | | | | | | | | | |
| **DV: Percent of women in parliament** | | | | | | | | | | | | |
| Female MP$_{t-1}$ | 0.938 | 0.031 | *** | 0.943 | 0.029 | *** | 0.956 | 0.029 | *** | 0.945 | 0.032 | *** |
| Family spending$_{t-1}$ | 0.258 | 0.602 | | | | | 0.596 | 0.561 | | 0.168 | 0.630 | |
| Employment | 0.044 | 0.032 | | 0.050 | 0.029 | | | | | 0.044 | 0.032 | |
| | | | | | | | | | | | | |
| **DV: Employment ratio** | | | | | | | | | | | | |
| Family spending$_{t-1}$ | 13.130 | 1.125 | *** | 13.153 | 1.125 | *** | 13.130 | 1.140 | *** | 13.130 | 1.172 | *** |
| | | | | | | | | | | | | |
| N | 162 | | | 162 | | | 162 | | | 162 | | |
| $\chi^2$ | 3.268 | 0.195 | | 3.451 | 0.327 | | 5.130 | 0.163 | | 9.246 | 0.026 | ** |
| RMSEA | 0.062 | (0.000, 0.181) | | 0.031 | (0.000, 0.140) | | 0.066 | (0.000, 0.162) | | 0.114 | (0.035, 0.201) | |
| GFI | 0.992 | | | 0.991 | | | 0.987 | | | 0.977 | | |

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