FAMILY POLICIES OR LABOR MARKETS? WOMEN'S EMPLOYMENT INEQUALITY IN 14 WELFARE STATES FROM 1960 TO 2008

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Abstract

Women's labor force participation has increased dramatically across all advanced capitalist democracies over the last 50 years. However, women continue to face significant employment inequality in hours of employment, pay, and occupational gender segregation. These changes in women's employment outcomes have captured the attention of welfare state researchers and policymakers and have radically altered our understanding of the welfare state.

In this dissertation, I empirically assess how both welfare state policies and changes in the labor market influence women's employment outcomes across 14 welfare states from 1960 to 2008. The countries in this analysis are Austria, Belgium, Canada, Denmark, Finland, France, (West) Germany, Ireland, Italy, the Netherlands, Norway, Sweden, the United Kingdom, and the United States. In this research, I focus primarily on family policies, a subset of state social policies that mediate the relationship between the market and family, and allow men and women to engage in care-taking responsibilities without losing their labor market position and rewards. The family policies I consider include parental leaves, publicly funded childcare, and family allowances, support benefits, and tax credits.

These policies are intriguing because there is evidence that much of the gap between men's and women's employment outcomes is caused by motherhood. Family policies are targeted specifically at mothers and families with children, and so should, theoretically, reduce the inequality between men's and women's employment outcomes. However, there is relatively little research into the role that family polices play in

employment inequality at the aggregate level, especially in hours of work, the wage gap, or occupational gender segregation. This dissertation fills in that research gap by investigating the impact of family policies on women's labor force participation rates, women's rate of and share of part-time work and involuntary part-time work, the male/female wage gap, and occupational gender segregation, while accounting for other welfare state policies and activities and labor market factors that have been linked to women's employment outcomes.

In my analysis, I find that parental leaves increase labor force participation rates among young women and reduce the male-female wage gap. Publicly funded childcare increases labor force participation rates among young women, decreases women's concentration in part-time employment and in involuntary part-time employment, and reduces the male-female wage gap. Importantly, neither parental leaves nor childcare policies appear to be strongly related to occupational gender segregation. On the other hand, family allowances and support benefits decrease labor force participation rates for women ages 25-34 and increase occupational gender segregation.

My analysis provides evidence that generous maternity and parental leaves and high levels of publicly funded childcare work to reduce employment inequality between men and women by reducing inequalities in hours of work and reducing the male-female pay gap. The finding for the pay gap is particularly exciting because recent research has found that much of the pay gap across countries has been shown to be due to motherhood. I conclude with implications and directions for future research.

Table of Contents

vii

List of Tables

List of Figures

Chapter 1. Introduction

Introduction to the Problem

Women's employment and continued inequality in a range of employment outcomes, including part-time employment, the male-female wage gap, and occupational gender segregation, has captured the attention of social scientists, welfare state researchers, and policymakers. Changes in women's employment have so radically altered the understanding of the welfare state that one prominent welfare state researcher argues that it "occupies center-stage in post-industrial society" with effects that have "reverberat(ed) through family life, politics, and the economy" (Esping-Andersen et. al. 2002:68). Women's labor force participation has increased dramatically across many advanced capitalist democracies, including the countries of Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Sweden, the United Kingdom, and the U.S., over the last 50 years (Figure 1.1).

However, women continue to face significant employment inequality in hours of employment and pay, and are segregated into different jobs than men. Figure 1.2 demonstrates that a substantial portion of women work part-time in many of the countries listed above; at the same time, relatively few men are in part-time work. This results in a gender imbalance in the share of part-time work (Figure 1.3), leading to negative consequences for women, especially in countries like the U.S. where part-time jobs rarely have benefits and are paid at lower hourly rates than full-time work. Women also earn less than men on average across all advanced capitalist democracies, although the pay

Figure 1.1: Female Labor Force Participation 1960-2008

Legend: Average, Denmark, Finland, Norway, Sweden, Austria, Belgium, France, Germany, Italy, The Netherlands, Canada, Ireland, U.K., U.S.A
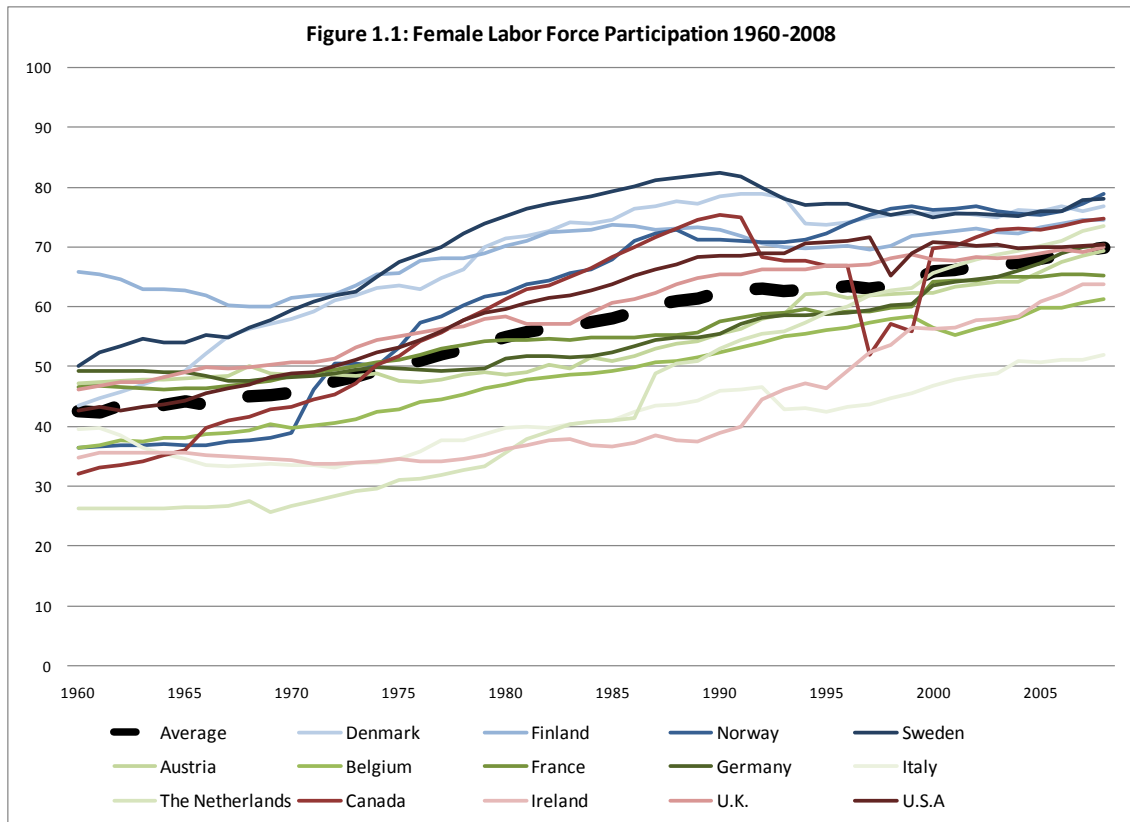
gap has generally been declining over time (Figure 1.4)[1]. Men and women are frequently

segregated into different jobs, with high rates of occupational gender segregation across

countries (Figure 1.5)[2]. Women are also less likely to receive benefits, have fewer

opportunities for promotion, and are more likely to be in marginal and unstable

employment (Budig and England 2001; Sigle-Rushton and Waldfogel 2007; Gangle and

Ziefle 2009). Moreover, women continue to be responsible for the majority of care and

household work across international contexts. Women are likely to face significant

penalties, both in the short- and long-term, for career interruptions related to this care

giving work (Budig and England 2001; Gangle and Ziefle 2009).

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[1] Figure 1.4 plots the male-female wage gap in average hourly earnings as a percentage of men's average hourly earnings.
[2] Figure 1.5 plots the size-standardized index of dissimilarity with higher values indicating more segregation in occupations. An index of dissimilarity score of 1 would be a perfectly segregated labor market, whereas a score of 0 would be a perfectly integrated labor market.

Figure 1.2: Female Part-Time Employment as a % of Total Female Employment

Country	1979	2008
Average	28.0%	35.9%
Finland	10.6%	18.2%
United States	26.8%	24.6%
Canada	25.3%	26.4%
Italy	10.6%	27.9%
France	17.0%	29.4%
Ireland	13.1%	32.5%
Sweden	46.0%	35.9%
Denmark	46.3%	36.5%
Austria	18.0%	41.5%
Belgium	16.5%	41.5%
Norway	51.5%	41.9%
United Kingdom	39.0%	41.9%
Germany	27.6%	45.8%
The Netherlands	44.0%	59.3%
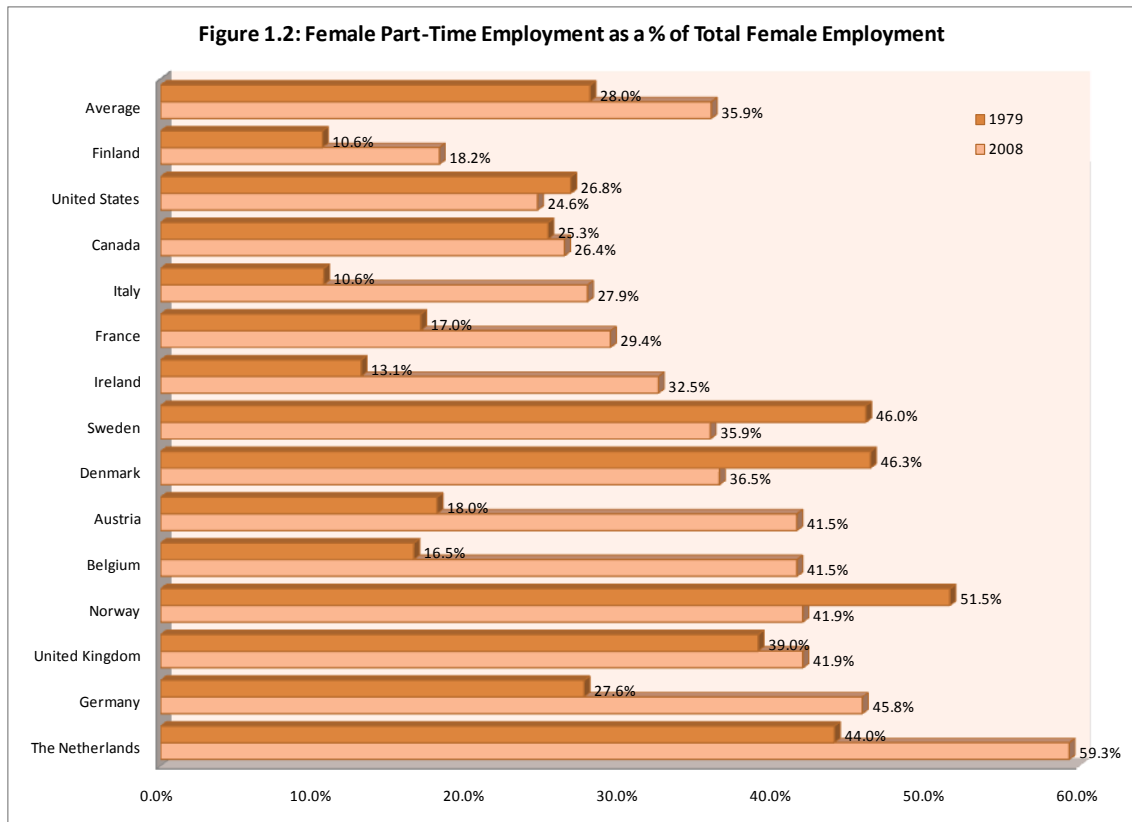
Women's employment outcomes have attracted scholarly and policy attention due to increasing fiscal austerity, expanding life-spans, and decreasing fertility in many welfare states (Scharpf and Schmidt 2000; Huber and Stephens 2001; Esping-Andersen et. al. 2002). High levels of female labor force participation have been found to be an important protective factor in helping welfare states maintain social spending by increasing tax revenue and economic growth (Scharpf and Schmidt 2000; Aronja, Ladaique, and Pearson 2001). Moreover, a high level of female employment lowers the number of people in poverty, decreasing the fiscal burden on the welfare state (Aronja, Ladaique, and Pearson 2001, Esping-Andersen et. al. 2002). Finally, due to a variety of factors, the increase in women's rates of labor force participation has been almost entirely responsible for household income growth since the mid-1970's (Kenworthy 2008).

3

However, with less inequality between men and women in employment, welfare states and households would see even greater benefits from female labor force participation. In other words, if women held jobs with the same pay and benefits as men, average incomes would be higher and families would have an easier time make ends meet. This would lead to lower levels of poverty, higher tax revenues for welfare states, and more robust economic growth. Thus, continued women's employment inequality is a pressing issue for women, families, and welfare states. Social science research has developed two parallel explanations for these changes in women's employment outcomes at the aggregate (country) level. These two explanations have developed from two literatures: the interdisciplinary literature on the welfare state and social policy, and the sociological literature on changes in the economy, labor markets, sex segregation,

Figure 1.3: Female Share of Part-Time Employment

Figure 1.4: The Male-Female Wage Gap as a % of Men's Wages

■ 1960 ■ 1984 □ 2008

	1960	1984	2008
Austria	34.0%	27.5%	
Belgium	35.8%	25.3%	12.7%
Canada	37.0%	21.4%	
Denmark	29.1%	14.9%	9.0%
Finland	35.4%	26.9%	19.6%
France	23.9%	19.3%	18.9%
Germany	32.3%	29.5%	24.3%
Ireland	49.7%	31.7%	18.7%
Italy	19.6%	16.1%	
The Netherlands	26.8%	23.0%	17.2%
Norway	28.2%	16.1%	14.3%
Sweden	15.7%	9.6%	13.8%
United Kingdom	41.0%	33.6%	23.2%
United States	33.4%	20.0%	
Mean	31.8%	25.3%	18.3%

Note: Austria, Canada, Italy, and the U.S. have missing data.
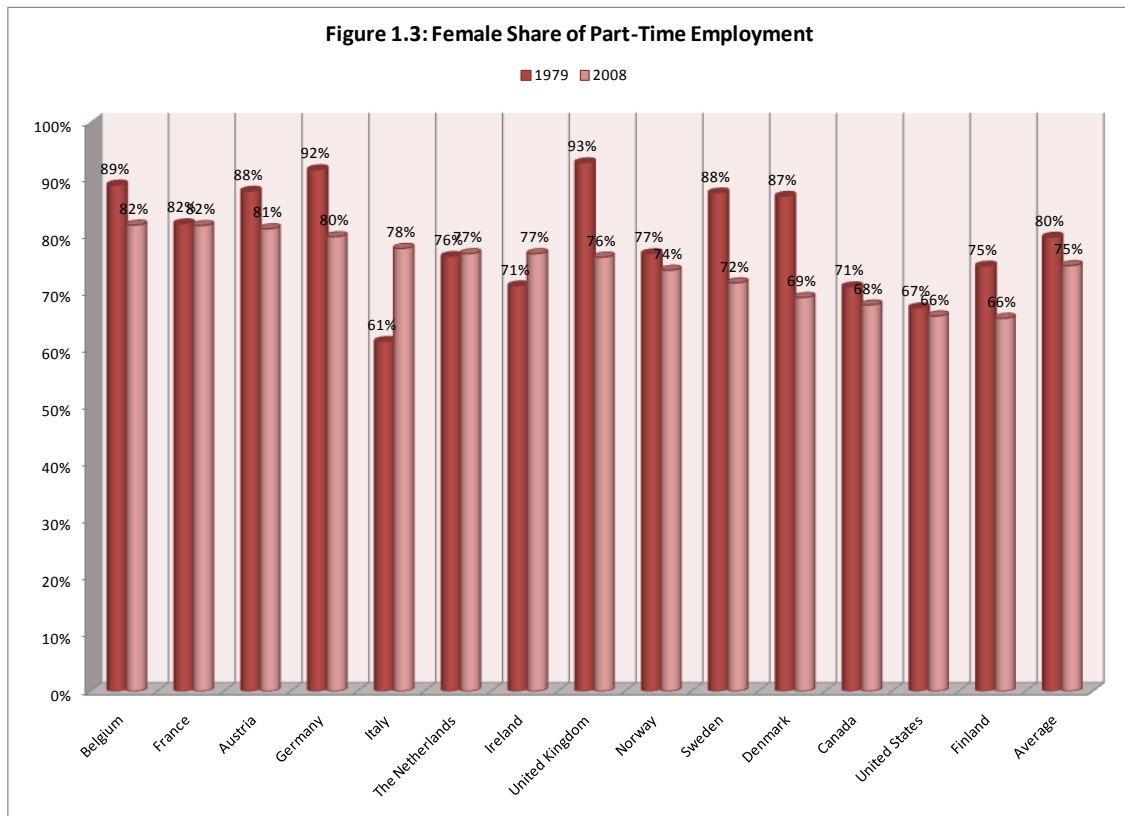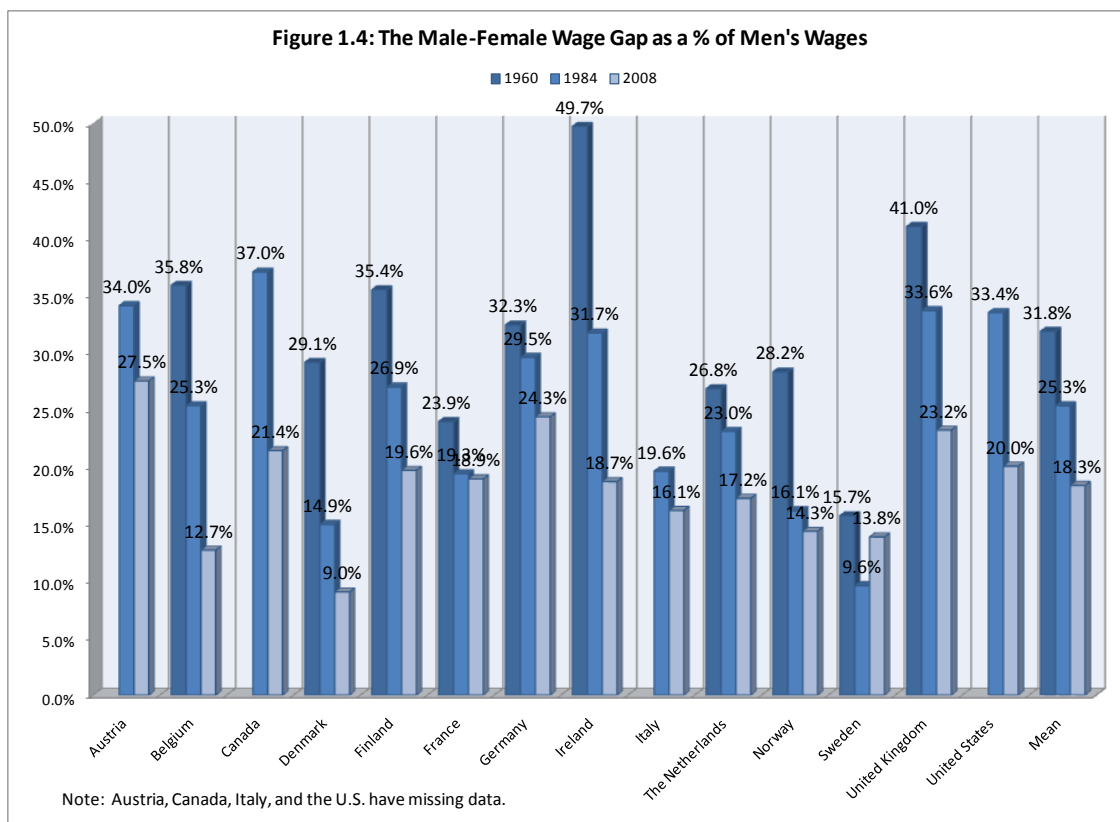
and women's labor supply. These two literatures have developed complementary, yet divergent, theoretical and empirical explanations for gender inequality in employment. The literature on the welfare state places primary importance on welfare state activities and policies because they regulate the relationship between the labor market and women through direct employment and policy. As a result, more generous policies can influence women's employment outcomes. On the other hand, the literature on changes in the economy, labor markets, sex segregation, and women's labor supply places primary importance on the role of the labor market in determining women's employment outcomes.

In previous work, I have argued that these literatures frequently work without reference to each other, with the labor market literature ignoring the role of the state and

its policies, and the welfare state literature ignoring the role of the labor market, with

relatively few exceptions (Tranby 2006). While research has independently shown that

both labor market processes and welfare state policies and activities influence women's

employment outcomes, we know very little about how these parallel processes work in

context with each other. Thus, we do not know whether these processes influence rates

of labor force participation and gendered employment inequality in employment

outcomes in the same manner or if they have competing effects. We know even less

about how family policies influence women's employment inequality. Understanding the

effects of these policies provides useful insights into understanding the interrelationships

between the welfare state and the labor market, because these policies sit at the

intersection of welfare state policies and activities, market factors, and individual forces.
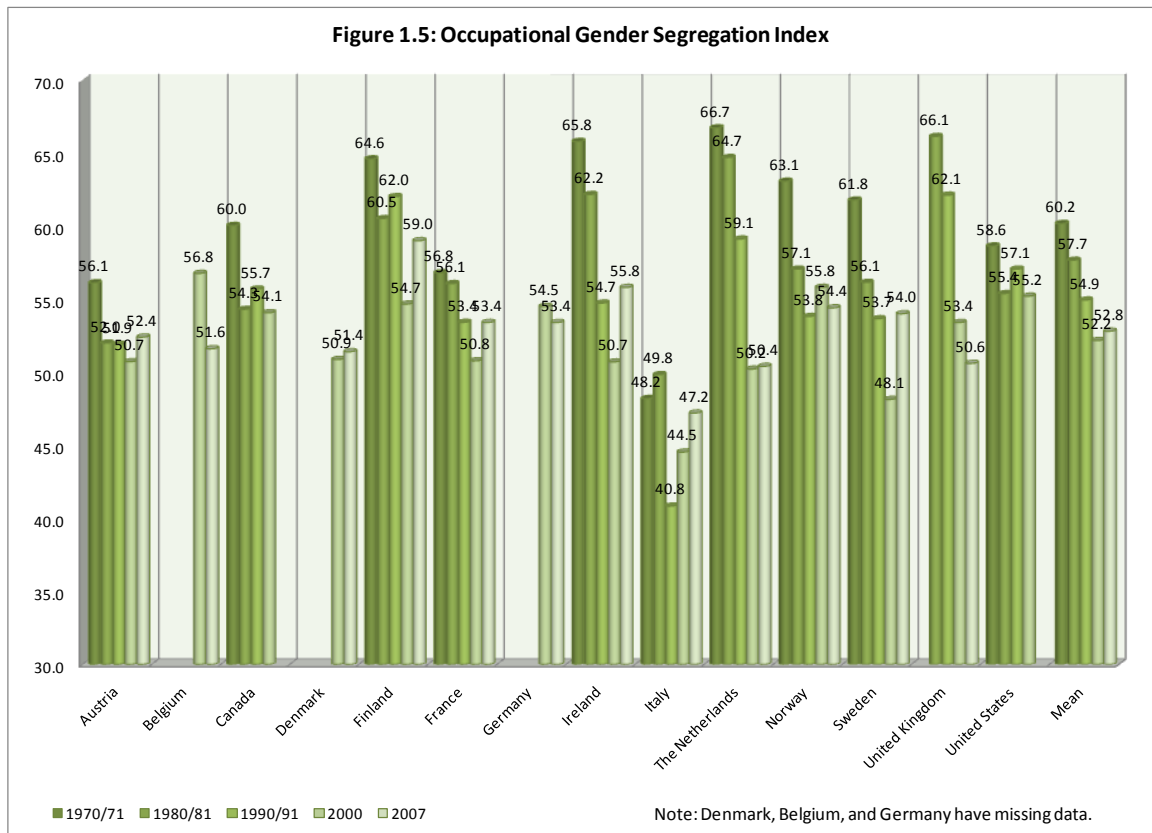
Figure 1.5: Occupational Gender Segregation Index

In this dissertation, I empirically assess how both welfare state policies and activities and changes in the economy and labor markets influences women's employment outcomes across 14 welfare states[3] from 1960 to 2008. I focus primarily on family policies, a subset of state social policies that, theoretically, mediate the relationship between the market and family, and allow men and women to engage in (or opt out of) care-taking responsibilities without losing their labor market position and rewards. The family policies I consider include parental leaves, publicly funded childcare and family allowances, support benefits, and tax credits. These policies are particularly intriguing because there is compelling evidence that much of the gap between men's and women's employment outcomes is caused by motherhood (Misra, Budig, and Moller 2007).

Family policies are targeted specifically at mothers, and families with children, and so should, theoretically, reduce the inequality between men's and women's employment outcomes. However, there is relatively little research into the role that family polices play in employment inequality at the aggregate level, especially in hours of work, the wage gap, or occupational gender segregation. This dissertation fills in that gap in the research by investigating the impact of family policies on the rate of female labor force participation, women's rate of and share of part-time work and involuntary part-time work, the male/female wage gap, and gender occupational segregation, while accounting for other welfare state policies and activities and labor market factors that have been linked to women's employment outcomes.

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[3] The countries in this analysis are Austria, Belgium, Canada, Denmark, Finland, France, (West) Germany, Ireland, Italy, the Netherlands, Norway, Sweden, the United Kingdom, and the United States.

Organization of Dissertation

This dissertation is organized into chapters that review the literature on the causes and consequences of women's employment inequality, that describe the data, variables, and methods used in the analysis, that describe and analyze women's employment inequality, that describe the family policy literature, and that empirically assess the impact of family policies on women's employment inequality.

The second chapter begins by reviewing the literature on the modern welfare state. This comparative literature reveals that state institutions, structures, and policies are both the cause and consequence of gender inequality in employment. In the second part of the second chapter, I review the large literature that focuses on individual and structural factors such as women's labor supply decisions, changes in the economy, the labor market, and sex segregation as the most important explanations for women's relatively poor employment outcomes. In general, the literature reviewed in this chapter argues that the interaction of market and individual factors creates and reinforces existing systems of stratification and inequality.

In the third chapter, I describe the data to be used throughout the following chapters, the variables used in the analysis, and the methods used. I first review the database, describing the coverage of the data, the process of data collection, and the strengths and weaknesses of the dataset. I then describe the particulars of each of the variables used in the analysis, including the women's employment outcomes and family policies that I described earlier, as well as employment in services, women's educational attainment, unemployment, economic growth, the role of left parties in government,

corporatism, the role of women in government, taxation, and public sector employment. I conclude the chapter by describing the analytical strategy and empirical methodology used, which is linear mixed models, including why this method was selected for the analysis, the various methodological decisions I made as part of the analytical strategy, and the modeling process.

In chapter four, I begin to integrate the literatures reviewed in the second chapter by focusing attention squarely on women's employment inequality and how it is influenced by both sets of explanatory factors. I begin this chapter by reviewing trends in women's employment inequality across the countries in my sample and over time. I next briefly review the literature that argues that women's labor force participation positively affects families and the state. I then describe how various welfare state and labor market processes are associated with these outcomes in the comparative perspective. In the analytical portion of the chapter, I use linear mixed models to assess the role of labor markets and welfare states on various measures of women's employment inequality in order to establish "base models" for use in subsequent chapters. This analysis reveals that employment in services has served to pull women into the labor force, but is also responsible for generating high levels of employment inequality between men and women. Economic growth is also associated with high levels of full-time employment for women. From the welfare state perspective, high levels of public sector employment is associated with higher levels of women's labor force participation, a lower male-female wage gap, but higher levels of occupational gender segregation.

In the fifth chapter, I review an emerging, and important, area of research that integrates these two literatures by focusing on family policies. I first describe the historical development of family policies. I focus particular attention on parental leaves, publicly funded childcare and family allowances, support benefits, and tax credits. I then review the small literature that empirically assesses the impact of family policies on female employment outcomes. While this is a relatively new literature, the weight of the evidence suggests that generous family policies increase rates of female labor force participation, but these effects are highly contingent on the institutional, cultural, and labor market contexts in which women make decisions about employment. However, I argue that we know relatively little about how family policies influence the hours of women's work or women's employment inequality in terms of wages or occupational gender segregation.

In the sixth, and perhaps most important, chapter of this dissertation, I conduct an empirical analysis that investigates the role of family policies on various measures of women's employment inequality. I find that parental leaves increase labor force participation rates among women in the 25-34 age bracket and reduce the male-female wage gap. Publicly funded childcare increases labor force participation rates among women ages 25-44, decreases women's concentration in part-time employment and in involuntary part-time employment, and reduces the male-female wage gap. Childcare for infants and toddlers had the broadest and largest impact on these outcomes, while childcare for pre-school children has a smaller impact. Importantly, neither parental leaves nor childcare policies appear to be strongly related to occupational gender

segregation, as found in a previous study. On the other hand, family allowances and support benefits decrease labor force participation rates for women ages 25-34 and increase occupational gender segregation.

In the seventh and final chapter of this work, I conclude that my analysis provides evidence that generous maternity and parental leaves and high levels of publicly funded childcare work to reduce employment inequality between men and women by reducing inequalities in hours of work and reducing the male-female pay gap. The finding for the pay gap is perhaps the most exciting, because in recent research, much of the pay gap across countries has been shown to be due to motherhood (Sigle-Rushton and Waldfogel 2007; Budig, Misra, and Boeckmann 2009). I expand upon the implications of these findings for researchers and policymakers in the conclusion. I also describe the weaknesses of this research, and suggest directions for future research in this concluding chapter.

Chapter 2. The Welfare State, Labor Markets, and Women's Employment Inequality: A Review of the Literature

2.1 Introduction

The poor employment outcomes of women relative to men across international contexts are well-known. While women's labor force participation is increasing in nearly all countries, women continue to be paid less, are less likely to receive benefits, have fewer opportunities for promotion, are more likely to be in marginal and unstable employment, and continue to be responsible for the majority of caregiving work (Mincer 1985; England and Farkas 1986; Budig and England 2001; Orloff 2002; Sigle-Rushton and Waldfogel 2007; Gangle and Ziefle 2009). In this chapter, I review the two literatures that have built parallel sets of explanations for these outcomes. First, I review the literature on the modern welfare state, which reveals that state institutions, structures, and policies are both the cause and consequence of gender inequality.

Before we can understand how welfare states are related to women's labor market outcomes, we first have to understand the larger literature surrounding the development and crisis of the welfare state, so significant space will be devoted to this issue at the beginning of the review. In particular, I focus on explanations for the development of the welfare state, focusing on partisan politics. Next, I turn to the influential idea of welfare state regimes, which categorizes different types of welfare states with different origins, goals, and outcomes. In this section, I focus particular attention on "gendering" the welfare state and the ways that feminist scholars have revised, discarded, or created new typologies that incorporate gender. Finally, I turn to the relatively recent literature on the 'crisis' of the welfare state, arguing that while the majority of evidence suggests that the

welfare state is in a period of marked fiscal austerity created primarily by the transition to the post-industrial economy, the welfare state has been remarkably resilient to these pressures.

Next, I review the large literatures that focus on individual and structural factors such as women's labor supply decisions, women's status attainment processes, changes in the economy, the labor market, and sex segregation as the most important explanations for women's relatively poor employment outcomes. This literature, in general, argues that the interaction of market and individual factors creates and reinforces existing systems of stratification and inequality.

The review begins by focusing on the United States, because the majority of the literature on these individual and structural explanations for women's employment outcomes is focused on this country. I first review the literature on individual explanations, focusing the majority of attention on the neoclassical microeconomic theories and the sociological literature that supports its expectations. These individualistic explanations have been heavily criticized by most sociologists for failing to account for structural and demand factors, such as employer discrimination, changing job conditions, and the structure of the labor market.

I then review the literature which has developed around these structural explanations, focusing first on macro-structural explanations, such as changes in the economy. I then focus on the segmented labor markets literature, which argues that the labor market is split into two or more segments, with different job characteristics in each sector. Finally, I review the literature on occupational sex segregation, which argues that

the segregation of men and women into different jobs, and the lower pay associated with women's jobs, is important for understanding women's employment outcomes. It is important to note that while this review, and the literature, separates the individual and structural explanations for women's employment outcomes; these factors have been shown to work in interaction to creates and reinforce the existing system of gender stratification.

I next turn to a review of the international and comparative literature on women's employment outcomes. While I reserve the majority of the discussion of the comparative literature for the fourth chapter, in this chapter, I do discuss the comparative literature on occupational sex segregation, along with the small literature on the impact of economic development on women's employment outcomes across comparative contexts. I devote most of my attention in this section to describing the intersection of individual and structural factors in Germany and Sweden. I do this in this section to provide some comparison to the heavy focus on the United States in the previous section. I chose these countries because they are always in different 'regime' types and represent qualitatively different sets of institutions, structures, policies, as well as individual and structural contexts that influence women's employment outcomes in fundamentally different ways. While there are advantages to focusing on this subset of countries, I do run the risk of emphasizing the differences or similarities between these countries as the most important or salient, when, in fact, there may be more salient differences or similarities between alternative sets of countries, depending on the issue under consideration.

2.2 The Development and Crisis of the Welfare State

In this section, I review the literature on the development and crisis of the welfare state. Before continuing, however, it is important to define the welfare state as well as the set of countries under consideration. Like many sociological concepts, there really is no agreed upon definition of the "welfare state", nor of the countries that are called "welfare states." However, to give an initial textbook definition, the welfare state can be conceptualized as variations and similarities in the "government-protected minimum standards of income, nutrition, health, housing, and education assured to every citizen as a political right" (Wilenksy 1975:1). While such a limited definition skirts important issues, such as the definition of "minimum", the functions of the welfare state, etc., it gives us a basic understanding of the welfare state to which we will add complexity through the course of this review.

The countries under investigation in many of the works reviewed here are some subset of the countries that have been advanced industrialized capitalist democracies since the end of World War II, including: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States. While the literature, in recent years, has shifted its focus to a wider array of countries, the majority of the literature is focused on some subset of these eighteen countries. In the rest of this section, I review the literature on the development of the welfare state, then I turn to the related idea of welfare state regime types; finally, I review the existing literature on the crisis and retrenchment of the welfare state.

2.2.1 The Development of the Welfare State

The period immediately following World War II saw massive increases in spending on social programs across the advanced industrialized countries, as described in Wilensky's influential 1975 study. This growth, at least from 1960, can be seen in Figure 2.1, which details social expenditure as a percentage of GDP from 1960 to 1980. The first generation of research on the welfare state saw the rising levels of expenditures on social programs as the inevitable byproduct of large economic forces, particularly industrialism, because industrialization creates new demands for public spending as old systems of social support erode and new vulnerabilities are created (Myles and Quadagno 2002). Wilenksy (1975) argues that the development of the welfare state is caused

Figure 2.1: Social Expenditure, Expressed as a Percentage of GDP, in 14 Welfare States from 1960-1980

Note: Data for Belgium and Denmark are missing for 1960

Source: Varley 1986
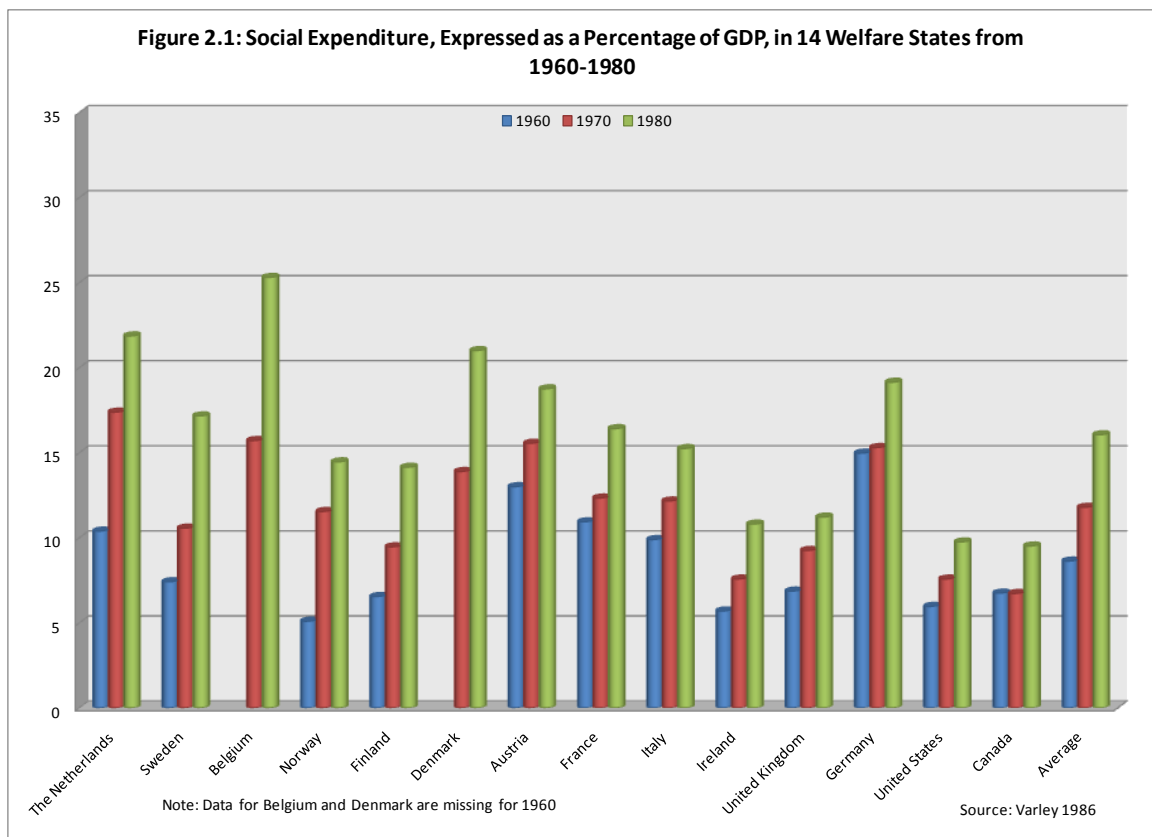
by economic growth, in addition to the age composition of the population and the "age" of the welfare state.

Strict versions of this 'logic of industrialism' theory have largely been discredited, due to variations in welfare state expenditure that cannot be explained by economic growth or demographic change. However, weaker versions of the theory argue that some level of economic growth (and sometimes demographic change) is necessary for welfare state expansion are generally accepted, especially when combined with some other theory that explains variations in social policy development across welfare state countries (Hicks 2000; Wilensky 2002).

More recent literature on the development of the welfare state has focused on explaining variations in spending and policies across welfare states. This literature has coalesced around two major theoretical strands: power resources theory, which is the idea that "politics matters", and statist theories, which is the idea that state institutions and structures are important for explaining the development and variation of welfare states (Myles and Quadagno 2002).

Power resources theory posits that through parliamentary democracy, the working classes can affect the redistributive nature of the welfare state, if they vote for explicitly class-based parties (Myles and Quadagno 2002). This theory quickly became the dominant theoretical paradigm in the literature on the development of the welfare state. Using this theory, many studies have shown that variations in welfare state spending, entitlements, and programs can be explained by the relative success of left, or Social Democratic parties, especially over the long-term (Esping-Andersen and van Kersbergen

1992; Huber, Ragin, and Stephens 1993; Huber and Stephens 2001; Hicks 2000; Myles and Quadagno 2002).

However, it is not left parties alone; rather, it is a combination of social democratic incumbency with a powerful and centralized trade union movement that negotiates with the government and employers, which we will for the moment call corporatism, that accounts for variations in welfare state outcomes (Esping-Andersen and van Kersbergen 1992; Wilensky 2002; Myles and Quadagno 2002). In particular, the long-term incumbency of Social Democratic parties, when linked with high levels of corporatism, tends to result in a leveling of the redistribution system, maintenance of (near) full employment, and large public sectors with public delivery of services all aimed at correcting inequalities created by the market (Esping-Andersen and van Kersbergen 1992; Huber, Ragin, and Stephens 1993; Huber and Stephens 2001).

For the purposes of this study, I define corporatism as an institutional arrangement in which important political and economic decisions are reached via a process of negotiation between centralized employer and employee groups, as well as the state. However, there is very little agreement in the literature about what corporatism is or how researchers should measure it, while at the same time there is little doubt that 'corporatism' is an important institution in a number of welfare state countries. In a recent review, Kenworthy (2003) finds that 42 distinct empirical measures of corporatism have been used in the literature. This lack of consensus of measures is reflective of a lack of a coherent and dominant theory about what corporatism is. Moreover, the empirical results of research examining corporatism are found to be very sensitive to the empirical

measure(s) of corporatism used in the study (Kenworthy 2003). This further confounds efforts to come to a consensus concerning what corporatism is and what the effects of it are.

The large public sectors that result from the combination of long-term Social-Democratic incumbency and corporatism emphasize service delivery. These large, service oriented public sectors have served to generate high levels of female labor force participation through both supply and demand factors; although there is some disagreement about the causal ordering of these factors (Huber and Stephens 2001; Eliason, Stryker, and Tranby 2008). This relationship between Social Democratic governments and increased female labor force participation has led some researchers to postulate a path-dependent relationship through which female labor force participation leads to increased political mobilization among women (Huber and Stephens 2000). This increased political mobilization among women in turn leads to support for the maintenance and expansion of the Social Democratic-led welfare states (Huber and Stephens 2000; Stryker and Eliason 2003). In this way, female labor force participation is a mechanism that may explain variations in welfare state development.

The long-term success of Christian Democratic parties, paired with social Catholicism, has also been found to have a distinctive role in generating variations in welfare state spending, entitlements, and programs (Huber, Ragin, and Stephens 1993; Myles and Quadagno 2002). The long-term incumbency of these parties results in different levels of social spending and different types of social programs than those developed by Social Democratic parties with their trade union allies. The Christian

Democratic commitment to the protection of the labor market position of men and, by

extension, their families is reflected in a low level of public service provision and an

increased reliance on transfer payments (Huber, Ragin, and Stephens 1993; Myles and

Quadagno 2002).

State structures and institutions have also proven important in understanding

variations in the development of the welfare state (Huber and Stephens 2001; Myles and

Quadagno 2002). Earlier theories focused on a wide variety of state features, including,

for example, the size and power of the bureaucracy, the institutional features of the

government, and the rules of electoral competition (Skocpol 1980; Myles and Quadagno

2002). However, recent research on the development of the welfare state has focused on

the idea of constitutional structure or 'veto points' as the most salient feature of state

structure. Thus, countries with constitutional structures that contain multiple 'veto

points', or points at which one or a few key players can stall legislation, tend to have

slower rates of policy change because it is more difficult for one party to dictate changes

in social policy. On the other hand, countries with fewer 'veto points' in their

constitutional structure were able to more quickly enact broad ranging social policy

changes (Huber and Stephens 2001; Myles and Quadagno 2002).

2.2.2 Welfare State Regimes

As can be easily seen from the literature on the development of the welfare state,

variations in welfare state development are the result of a number of factors, including

political orientation, levels of female labor force participation, and constitutional

structure, to name a few. Several researchers, most notably Esping-Andersen (1990; 1991), recognized that these factors are not distributed randomly, but rather countries tend to cluster together and contain more or less common features, goals, and outcomes in these clusters. This realization led to one of the more useful, and maybe overused, ideas in the recent welfare state research, the welfare regime typology.

While Abrahamson (1999) reveals that welfare state researchers have been developing typologies to describe variations in countries since the late 1950's, most notably Titmuss, Flora, and Alber; it wasn't until the 1990 publication of *The Three Worlds of Welfare Capitalism* by Esping-Andersen that the use of regimes typologies became common practice in welfare state research. Esping-Andersen (1990) argues that that there are three criteria that define the role of the welfare state in society. These are, first, the granting of social rights, mainly the decommodification of individuals in relation to the market; second, the role of social policy in creating a system of stratification; and third, the interaction between the market and the state. He argues that all of these criteria are present in modern welfare states, but that each of these criteria functions differently in each welfare state.

Using these criteria, Esping-Andersen (1990) identifies three types of welfare, or social policy, regimes. The first is labeled the "liberal" regime type and consists largely of the Anglo-Saxon countries, particularly, the United States, Canada, the United Kingdom, Australia, and New Zealand. In this regime type, the market is considered the principal regulator of the labor contract, with the state playing only a secondary role (Montanari 2001). Moreover, social policies tend to include "means-tested assistance,

modest universal transfers, or modest social-insurance plans predominate. Benefits "cater mainly to a clientele of low-income, usually working class, state dependents" (Esping-Andersen 1990). As result, liberal regimes minimize decommodification and erect a system of stratification with high income/wage dispersion and a high degree of poverty.

The second regime is labeled "conservative-corporatist" and consists of the continental European countries including Austria, Belgium, France, Germany, and Italy. This type has also been called the Continental European type or the Christian Democratic type (Huber and Stephens 2001). In this regime type, the state largely displaces the market as a provider of welfare and markets are generally considered to be creations of public policy deployed to serve public purposes. This regime type is "predominated… (by the) preservation of status differentials; rights, therefore, were attached to class and status" (Esping-Andersen 1990). Countries in this regime type also tend to be heavily influenced by the church, and as such, are particularly devoted to the preservation of the traditional family structure. Therefore, tax policies and family benefits are designed to support a male-breadwinner model in which social services are provided by the family and the state only intervenes when the families' capacity is exhausted (Esping-Andersen 1990).

The third and final regime type is called the "social-democratic" regime type and consists of the Scandinavian countries including Sweden, Finland, Norway, and Denmark. In this regime type, "the principles of universalism and de-commodifying social rights were extended also to the new middle classes" (Esping-Andersen 1990).

Thus, these states strive for full employment, low levels of stratification, and high levels

gender equality. Therefore, these countries usually have universalistic social insurance

programs and policies that promote an egalitarian society and full social citizenship for

all members of society (Esping-Andersen 1990; Esping-Andersen et. al. 2002;

Kenworthy 2004).

While Esping-Andersens' work has been extremely influential in organizing

welfare state research and ongoing empirical research generally confirms the existence of

his typology (Abrahamson 1999; Saint-Arnaud and Bernard 2003; Orloff 2002), his

tripolar scheme has not been accepted without criticism. A number of scholars have

engaged in revisions of or additions to his typology (*cf* Liebried 1993, Castles and

Mitchell 1990). Esping-Andersen's (1990) typology has also been criticized, particularly

by Korpi and Palme (1998) and Korpi (2000), for including an agglomeration of causes

and effects. These scholars argue that all the 'ingredients' of a typology should be on one

side of the causal relationship and be developed based on the institutional structures or

policies of interest. This 'case-centered' approach has been utilized successfully by a

number of researchers, particularly those interested the effect of policies on particular

outcomes and seems to be the most promising and useful development from the various

critiques of this typology (Abrahamson 1999).

Another important line of criticism comes from feminist scholars who argue that

Esping-Andersen's (1991) typology does not sufficiently integrate gender (Orloff 1993;

O'Connor 1996)[4]. Orloff (1993) believes that the three criteria that Esping-Andersen

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[4] In general, feminist scholars argue that the conception of social citizenship, which is at the center of much
welfare state research, is profoundly gendered and takes for granted the role of women as "careers". That

23

argued define the role of state in society need to be revised to incorporate gender. She extends state and market criterion to include families' contribution to welfare and the political importance of the family-state division to welfare labor. The stratification criterion is expanded to consider the effects of social provision by the state on gender relations, especially the treatment of paid and unpaid labor. Finally, she roundly criticizes the social rights and decommodification criteria by arguing that it ignores differentials in men's and women's work as well as ignoring those engaged in caring and domestic labor (Orloff 1993).

Both Orloff (1993) and O'Connor (1993) argue that additional criteria should be added to the typology in order to capture the effects of the state on gender relations. These include access to paid work, the ability to form and maintain an autonomous household, and expanding the understanding of citizenship to include participation in social movements and state bureaucracies. Implicit in these criteria is an assumption that independence is the key to full citizenship and that employment is the key to independence (O'Connor 1996). I argue later that participation in and equal access to employment is dependent on social policy strategies that allow individuals to balance work and care-giving responsibilities.

Both feminist and mainstream scholars alike have attempted to incorporate gender in welfare state research by devising new regime typologies organized primarily around

is, these scholars argue that the implicit assumption of mainstream conceptions of social citizenship is that the 'citizen' is a male worker without care-giving responsibilities. This conception divorces the public sphere of citizenship from the private sphere of the home, leading the role of women, who are typically the primary givers of care, to be largely ignored (O'Connor 1996; Orloff 1996; Crompton 1999; Daly and Lewis 2000; Meyer 2000). Feminist scholars argue that we need to develop a new conception of social citizenship that takes seriously the role of women and gender in the welfare state because citizenship rights shape women's material situations, gender relationships, and structures political conflict and participation (O'Connor 1993, Orloff 1993).

gender issues. These typologies have largely been interested in the ways in which care

work is organized, in particular the division between public and private responsibilities

for caring (Lewis 1992; Sainsbury 1999; Bettio and Plantega 2004). While the definition

of care work is ambiguous, and often contested (Lewis 1998), we can broadly define care

work as "the activities and relations involved in meeting the physical and emotional

requirements of dependent adults and children, and the normative, economic, and social

frameworks within which these are assigned and carried out" (Daly and Lewis 2000:285).

This definition of care has been used successfully to develop a number of typologies,

some of which overlap with Esping-Andersen's tripartite typology and some of which cut

across this typology (Lewis 1992; Daly and Lewis 2000; Bettio and Plantega 2004).

Many of these typologies relate the concept of care, and public policies related to it, to

issues of work and the ability of women to balance employment and care responsibilities

(Sainsbury 1999; Korpi 2000; Misra, Budig, and Moller 2007)[5].

Finally, various researchers have critiqued, some more explicitly than others, the

notion of typologies altogether. Researchers, particularly those interested in issues of

gender, have pointed to the remarkable differences among countries in the same regime

type (Orloff 1996; O'Connor, Orloff, and Shaver 1999; Leira 2002). While these

scholars recognize that regime typologies are largely meant to represent 'ideal types',

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[5] Feminist critiques of mainstream welfare state research, along with the steady increases in women's labor force participation brought about by postindustrialism, have spurred investigation into the effects of women's labor market participation on families and the state (Esping-Andersen 2002). This research demonstrates not only that welfare state institutions, structures, and policies influence women's labor force outcomes, as will be detailed below, but that women's labor force participation effects families and the state in mainly positive ways. I review this research in later chapters.

their research does suggest that we have to be careful about the extent to which we consider all the countries in a regime type to be identical.

Kasza (2002) is perhaps the most vocal critic of regime typologies. He argues that social policies, and the rationales behind them, are not consistent within the countries of a regime type due to the cumulative nature of policy making, diverse policy histories, variations in policy actors, variations in the policy-making process, and the use of foreign models. While his argument is interesting, it isn't particularly compelling because his empirical work is limited to Japan, a country that other scholars, including Huber and Stephens (2001), have difficultly classifying into a typology. His argument does remind us, however, that there are substantial variations among countries within a regime type. While social policy regime typologies have been subject to much debate, they continue to be successfully used as both descriptive and analytical tools for understanding the origins, development, and outcomes of social policy.

Social policy regimes, however they are defined, have also been frequently, and productively, connected with the literature on comparative political economy (Huber and Stephens 2001). The literature on comparative political economy has recently come to be dominated by the idea of that there are different 'varieties of capitalism' or production regimes (Hall and Soskice 2001; Howell 2003).

The varieties of capitalism literature focuses on the relationship between employers and employees, arguing that the level and type of cooperation between these two players, and how they interact with the state, is central to the type of economy a country develops (Crouch 1993; Crouch and Streeck 1997; Hall and Soskice 2001;

Howell 2003). Hall and Soskice (2001) argue that there are two basic types of economies in advanced industrialized countries. In the "liberal market economies" (LMEs), which include the Anglo-dominated countries, of which the United States is the ideal-typical case, free-market competition produces an equilibrium between supply and demand and coordinates most economic activity. Generally, this arrangement creates an economy characterized by flexible labor markets, heavily capitalized stock markets, high levels of income inequality, and minimal state involvement in the economy (Hall and Soskice 2001).

Conversely, in the "coordinated market economies" (CMEs) of eastern Asia and northern Europe, of which Germany is the ideal-typical case, prominent non-market institutions resolve many important coordination problems. Under this economic system, deliberative institutions provide regular opportunities for major economic actors−such as corporations, labor unions, banks, and the state−to collectively negotiate agreements on many core economic issues, including but not limited to prices, wages, working conditions, and vocational training standards. Generally this arrangement creates an economy characterized by highly regulated labor markets, powerful banks with close ties to industry, low levels of income inequality, and moderate state involvement in the economy (Rosenfeld and Kalleberg 1991; Hall and Soskice 2001). Crouch and Streeck (1997) argue that there are really two types of CME's, the German or 'Rhine' model and the Swedish or 'Scandinavian' model. The 'Rhine' model is the classic CME, described above; while the Scandinavian model places an emphasis on women's employment, a

dedication to universal policies and full employment, a large public sector, and centralized trade unions (Crouch 1993; Crouch and Streeck 1997).

These different varieties of capitalism are largely associated with social policy regimes, such that liberal market economies are intertwined with liberal regimes and coordinated market economies are associated with the conservative-corporatist or social democratic regimes (Albert 1993; Hall and Soskice 2001). This has led many welfare state scholars to argue that we should be paying much more attention to these varieties of capitalism and how they are related to the development of social policy (Pierson 2000; Huber and Stephens 2001). In fact, Huber and Stephens (2001) argue that coordinated market economies are the essential infrastructure on which the generous welfare states are built.

2.2.3 The Crisis of the Welfare State

The most recent period of welfare state development, from the oil crises of the late 1970's to the present, has seen substantial changes in the conditions faced by governments, including increasing unemployment, slower economic growth, rising deficits, and changing economies brought about by globalization (Clayton and Pontusson 1998; Stryker 1998; Myles and Quadagno 2002). The effect of these changing conditions on social policy has become a major focus of research on the welfare state over the last 10 years or more, with some researchers calling this period the crisis of the modern welfare state (Huber and Stephens 2001)[6].

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[6] The increasing role of the European Union in the affairs of its member nations with regard to social policy, in general, and family policy, in particular, should not be ignored (Ebbinghaus 1998). There has

Welfare state researchers have documented rollbacks and changes in major social programs for at least the past two decades (Clayton and Pontusson 1998; Huber and Stephens 2001). In particular, it is argued that increasing levels of social dislocation brought about by demographic changes and high levels of unemployment place untenable demands on social programs. These demands lead welfare states to cut benefit and service levels, along with the size of the public sector and other important programs (Clayton and Pontusson 1998). Additionally, common pressures from globalization, international organizations, and the rise of neoliberalism have influenced all governments to cut spending on social programs (Clayton and Pontusson 1998; Regini 2000; Schaprf and Schmidt 2000; Castles 2001). These pressures have largely resulted in programmatic retrenchment, or cuts in select social programs, rather than across the board cuts (Pierson 1996). However, observers have also paid particular attention to the large scale systemic retrenchment of multiple social programs at the same time that followed the electoral victories of neo-liberals in the United States, Great Britain, and New Zealand and factors such as declining unionization and power of the working class relative to capital (Stryker 1998; Huber and Stephens 2001). Korpi and Palme (2003) argue that if we use

been a substantial effort to coordinate social policy across member nations, particularly in regulatory and family policy (Guerrina 2002; Hobson 2000; Randall 2000; Scharpf and Schmidt 2000; Hardy and Adnett 2002). However, the EU has mainly passed non-binding resolutions or set minimum standards or levels of policy that most nations had already surpassed (Hobson 2000; Hardy and Adnett 2002). Moreover, EU standard setting in family and gender policy has not resulted in substantial convergence, leading many scholars to conclude that differences in the institutional and ideological arrangements of nation-states places limits on the extent to which the EU will result in convergence across nations (Randall 2000). Even when EU directives have resulted in changes in countries social policies, the crucial causal mechanism for instituting these directives is women's political power, not pressure from the EU (MacRae 2006; Bleijenbergh and Roggeband 2007).

unemployment as an indicator of retrenchment, there has been significant retrenchment in most welfare states.

However, while there have been instances of both programmatic and systemic retrenchment in some countries, prognostications of the welfare state's demise are most likely premature and inaccurate (Esping-Andersen 1996; Pierson 1996 and 2001; Castles 2001; Myles and Quadagno 2002; Swank 2002; Korpi and Palme 2003). Despite the major pressures on the welfare state, recent research has shown the remarkable resiliency of welfare states to these pressures. This resiliency can be seen in Table 2.1, which details social expenditure as a percentage of GDP from 1985 to 2005. We can see that social expenditure changes very little over this period, in fact, it increased by an average of 1.5 percentage points. Importantly, nearly every country sees modest increases, rather than decreases, in gross social expenditure during this period.

Table 2.1: Social Expenditure, Expressed as a Percentage of GDP, in 14 Welfare States from 1985-2005.

Country	1985	1990	1995	2000	2005	Change Over Period
Italy	20.81	19.95	19.90	23.26	24.98	4.17
Norway	17.77	22.31	23.28	21.31	21.64	3.88
Denmark	23.24	25.14	28.92	25.81	27.08	3.84
Finland	22.50	24.17	30.90	24.31	26.10	3.60
Germany	23.21	22.28	26.51	26.18	26.75	3.54
Austria	23.79	23.87	26.54	26.37	27.20	3.41
France	26.00	25.09	28.60	27.86	29.17	3.18
United States	13.06	13.36	15.32	14.50	15.91	2.85
United Kingdom	19.75	17.02	20.20	19.19	21.29	1.54
Belgium	26.02	24.89	26.25	25.28	26.40	0.38
Sweden	29.39	30.20	32.14	28.54	29.43	0.04
Canada	16.99	18.12	18.89	16.50	16.49	-0.49
The Netherlands	25.34	25.57	23.81	19.79	20.88	-4.47
Ireland	21.31	14.93	15.68	13.59	16.73	-4.58
Mean	22.08	21.92	24.07	22.32	23.58	1.49

Data Source: OECD Social Expenditure Database 2008

A variety of welfare state scholars have also argued that there has been little to no decrease in social spending in major social programs during this period (Esping-Andersen 1996; Pierson 1996; Castles 2001). Rather, to many, it appears that the landscape looks relatively frozen, with expenditures generally neither decreasing nor increasing (Esping-Andersen 1996; Hacker 2006). Moreover, changes in specific programs which at first glance may be construed as program retrenchment are often really the result of program restructuring, or reforms aimed to accommodate changing social needs (Myles and Quadagno 2002). The most prominent of these are the increasing attention paid to family policies which are meant to address changing family structures and high levels of female labor force participation, which I address in later chapters. Some countries have even increased spending or instituted new social programs to meeting changing needs, particularly the changing needs of families in light of rising rates of female labor force participation.

Research on the welfare state provides a number of sometimes contradictory explanations for this resiliency. The most well-known is Pierson's (1996; 2001) ideas about the new politics of the welfare state. Pierson, and others, argue that the politics of retrenchment are very different from the politics of development or expansion and that we need to develop new theories about how politics matter in this new era (Pierson 1996; 2001; Castles 2001). He argues that in many welfare states it is politically difficult to cut welfare state programs due to the path dependent nature of social policies. In other words, once social policies are in place for a period of time, the beneficiaries of these policies become used to the benefits of a particularly program and attempts to cut benefits

or expenditures by politicians and policy makers will be met with resistance (Pierson 1996; 2001). This is particularly true for universalistic social insurance programs (Korpi and Palme 2003). Pierson (1996) also argues that democratic institutions are inherently conservative and tend to favor the status quo, which would also limit retrenchment. In contrast to this explanation, Hacker (2006) argues that in the U.S., opponents of the welfare state have been successful in privatizing risk by blocking efforts to reform social policies to meet changing social risks and by putting in place new policies that subvert existing policies. The net result has been erosion in social protection without dramatic instances of policy reform.

Also, not every scholar agrees with Pierson (1996; 2001) and Castles (2001) that existing theories of welfare state development are not tenable in a period of retrenchment. In particular, Korpi and Palme (2003) argue that partisan politics continue to matter. They find that countries with major left party representation are less likely to suffer retrenchment in social insurance programs, while governments dominated by secular conservative-centrist governments are more likely to suffer retrenchment. High levels of corporatism, as defined previously, also seem to protect against retrenchment (Swank 2002). Moreover, Swank (2002) and Pierson (2001) both argue that coordinated market economies are less vulnerable to retrenchment, in part because they allow employers and employees to create a system of "trade-offs" that don't exist in liberal market economies. However, coordinated market economies and high levels of corporatism are unlikely to offer much protection if the social insurance programs in a country are based heavily on

earnings-related transfers and women are excluded from the labor market, as is often the case in conservative-corporatist countries (Scharpf and Schmidt 2000).

High levels of female labor force participation are found to be an important protective factor in helping welfare states maintain social spending (Scharpf and Schmidt 2000; Aronja, Ladaique, and Pearson 2001). Female labor force participation, in particular, and full employment, more generally, is found to increase tax revenue and economic growth. Moreover, a high level of female employment lowers the number of people in poverty, decreasing the fiscal burden on the welfare state (Aronja, Ladaique, and Pearson 2001, Esping-Andersen et. al. 2002).

Finally, state institutions continue to be important for predicting welfare state retrenchment. As discussed previously, countries with multiple veto points were less likely to develop extensive social programs; however, these same countries are also less likely to suffer retrenchment in these programs for the exact same reasons that they are unlikely to develop extensive social programs. Likewise, countries with few veto points find it to relatively easy to develop expansive programs, but also easier to institute cutbacks in these programs, if they desire to do so (Huber and Stephens 2000; Scharpf and Schmidt 2000; Korpi and Palme 2003). However, this process is likely mediated by political factors because countries which have multiple veto points, especially the United States, have undergone major retrenchment in social policies, whereas countries with fewer veto points, like Sweden, have failed to undergo such retrenchment.

Let us not be mistaken; the preceding discussion of welfare state resiliency should not be taken as an argument that the modern welfare state is in a period of fiscal security

and growth. Rather, it is clear that the welfare state is in a period of marked fiscal austerity which is remarkably different from the earlier period of welfare state development. The challenge, as Myles and Quadagno (2002) argue, is to understand why this new period developed and how this period limits or constrains the welfare state.

Perhaps the most frequent explanation given for the rise of this crisis is globalization. While various authors use different definitions of globalization, it generally includes increased capital flows across national borders, brought about by the deregulation of the capital markets (Stryker 1998; Scharpf and Schmidt 2000; Castles 2001; Swank 2002). Other important aspects that are sometimes included in definitions of globalization are the telecommunications expansion, transnational corporations, foreign direct investment, shifts to 'leaner' production methods that permit rapid adaptation to innovation, increased incorporation of the third world into trade, and a world economy so tightly integrated that no country can 'opt out' (Stryker 1998; Korpi and Palme 2003). There is reason to believe that globalization should bring about major changes in the economies of welfare states. It was theorized early on that increasing internationalization of capital would threaten employment in vulnerable sectors because employers in these sectors can always at least threaten to move. Moreover, it would constrain the ability of governments to tax capital in order to pay for the welfare state, for these same reasons (Stryker 1998; Scharpf and Schmidt 2000; Castles 2001; Swank 2002). Thus, it was expected that welfare states would cut social programs in order to conform to the desires of capital and forestall capital flight, thus creating convergence around lower and lower levels of social spending, often called the 'race to the bottom'.

While the globalization thesis, particularly the feared 'race to the bottom', makes basic theoretical sense, existing research has failed to find such convergence around low levels of social spending (Scharpf and Schmidt 2000; Castles 2001; Swank 2002). Moreover, recent quantitative research finds that globalization does not clearly cause welfare state expansion, crisis, and reduction or convergence. Thus, bold claims about globalization's effect on the welfare state should be treated skeptically (Brady, Beckfield, and Seeleib-Kaiser 2005). Rather, these common pressures are dealt with in divergent ways that are consistent with the systems of economic relations, employment, and social programs present in each country (Stryker 1998; Scharpf and Schmidt 2000). Scharpf and Schmidt (2000) as well as Swank (2002) demonstrate – using both quantitative measures and empirical case studies – that internationalization and capital mobility have the most effect on social policies in liberal states. While Swank (2002) believes that both social democratic and conservative-corporatist nations are more likely to be protected from internationalization pressures, Scharpf and Schmidt (2000) believe that social democratic nations are well-protected, while conservative-corporatist nations are particular vulnerable because their social insurance programs tend to rely on earnings-related transfers and women are excluded from the labor market .

In addition to pressures brought about by capital mobility, welfare state researchers have identified a number of other explanations for this new period of fiscal austerity. Clayton and Pontusson (1998) show using detailed social expenditure information, demonstrate that social programs in many countries may have grown to their limits. In other words, in countries with generous social policies, particularly the social

democratic countries, most of the population is already covered by generous, universal

benefits, so the welfare state simply does not need to expand.

A number of researchers have refuted this claim, most notably Korpi and Palme

(2003) by demonstrating that the largest cuts in social spending have tended to come in

countries that have the lowest initial level of benefits. However, a more influential

arguments in this vein is brought forward by Pierson (2001), who argues that some social

programs, particularly pensions but also unemployment benefits, are 'maturing' due to

the expansion of welfare state commitments. That is, many of these policies were put

into place when the population was young and there were high levels of employment. In

the current period high unemployment and an aging population, these generous policies

are maturing and increasing fiscal demands on welfare states, particularly conservative-

corporatist states.

The explanation that is perhaps the most agreed upon in the literature is the

transition to what Myles and Quadagno (2002) call the postindustrial economy. The

postindustrial economy is characterized by the massive shift of employment from the

manufacturing to the service sector over the last twenty to thirty years. With this

employment shift has come rising unemployment and slower production growth (Scharpf

and Schmidt 2000; Huber and Stephens 2001; Pierson 2001; Castles 2001; Myles and

Quadagno 2002; Korpi and Palme 2003). Rising unemployment, in particular, places

heavy financial burdens on social programs while shrinking the tax base with which to

pay for these programs (Huber and Stephens 2001; Castles 2001; Korpi and Palme 2003).

The result of the service sector economy is not a 'race to the bottom', but rather a

"limited set of unpleasant trade-offs" (Myles and Quadagno 2002:45). These trades-offs are what Hemerjick and co-authors (2000; 2002) have called the "service sector trilemma", in which countries can pursue two out of the following three things: full employment, fiscal balance, or equality. Iversen and Stephens have extended this trilemma to consider the mutual reinforcing effects of social insurance, skill formation, and spending on public education with similar results (2008).

Each of the social policy regimes has pursued a different set of goals, based on cultural and political background. The liberal states, in general, and the United States in particular, have embraced service sector employment, especially for women and minorities. As we will see in the fourth chapter, these jobs pay significantly less than manufacturing jobs. Thus, liberal nations have sacrificed equality, while maintaining high employment and fiscal balance (Hemerjick and Schuldi 2000). These countries have also placed a heavy emphasis on private investment in general skills (Iversen and Stephens 2008). Conservative-corporatist states, especially Germany, have refused to lower social benefits or wages and continue to focus on vocational training in firm-specific and industry-specific skills (Iversen and Stephens 2008). High wages in the core manufacturing sectors drive up the cost of services, so demand for services is comparatively low, resulting in a small service sector. The small service sector in conservative corporatist countries then results in higher unemployment, especially among women and the young (Myles and Quadagno 2002). Thus, conservative corporatist countries have maintained fiscal balance and equality at the cost of full employment.

Finally, Sweden and the rest of the social democratic nations have utilized the public sector and redistributive social benefits to provide services, keeping wages high. However, having such a large public sector and maintaining generous benefits becomes increasingly difficult in times of fiscal austerity (Clayton and Pontusson 1998; Scharpf and Schmidt 2000; Kenworthy 2004; Iversen and Stephens 2008). Thus, social democratic states have sacrificed fiscal sanity for full employment and equality.

Postindustrialism has spurred, at least in part, the relatively new phenomenon of increased rates of women's labor force participation. Esping-Andersen (2002) argues that increases in women's labor force participation were triggered by the emergence of the service sector, due to the high number of "female" jobs present in the service sector. Moreover, women's labor force participation feeds the demand for services which used to be provided in the home (Huber and Stephens 2000; Esping-Andersen 2002; Eliason, Stryker, and Tranby 2008). These changes have "reverberat(ed) through family life, politics, and the economy" (Esping-Andersen et. al. 2002). Along with feminist critiques of mainstream welfare state research, these changes have spurred investigation into the effects of women's labor market participation on families and the state (Esping-Anderson et. al. 2002). In later chapters, I will review research demonstrating that welfare state institutions, structures, and policies influence women's labor force outcomes but that women's labor force participation affects families and the state in mainly positive ways.

2.3 Individualistic Labor Market Explanations for Women's Employment Outcomes

Individualistic explanations implicate women's caretaking responsibilities, labor supply decisions, and work and educational characteristics for women's lower employment outcomes. The major paradigm that utilizes individualist explanations for women's employment outcomes is neoclassical microeconomic theory. Below, I review the neoclassical literature, focusing on the sociological research that conforms to the expectations of this theory (I review research that challenges this theory in much more detail later in this chapter). Another paradigm that utilizes these explanations is the sociological status attainment literature, which is not reviewed here because I do not utilize insights from this literature in my dissertation.

2.3.1 Neoclassical Microeconomic Theory

The dominant paradigm for understanding women's outcomes is neoclassical microeconomic theory (England and Farkas 1986; Smith 1990; Blau, Ferber, and Winkler 1998). This theory contends that women's poor employment outcomes are the result of rational decisions made by families and the human capital characteristics of women. No place is reserved in this theory for structural factors or discrimination by employers. Before continuing, it is important to note that, for the large part, I am not working from the economics literature on these issues. Rather the majority of this review comes from sociological literature and evidence about these theories. The sociological literature often assumes, rightly or not, that neoclassical microeconomic theory has stayed relatively

stable over time, with more recent work continuing to cite the classic economic and sociological work in the area.

In neoclassical microeconomic theory, individuals are assumed to maximize their well-being, subject to a budget constraint. For example, the decision to marry is affected by the material gains that may occur as spouses are able to specialize in home or market production (Blau, Ferber, and Winkler 1998). Viewed in this light, housework differs from market work only in location, not in intrinsic worth. Each person is viewed as being willing to enter a mutually advantageous trade agreement in which some people will decide to specialize in home services, others will decide to specialize in gaining market goods, and they will trade to the mutual advantage of both (Blau, Ferber, and Winkler 1998; Sigle-Rushton and Waldfogel 2007). Due to a variety of mechanisms, including biological differences, economists argue that women have a comparative advantage in household activities, while men have a comparative advantage in market activities (Rossi 1985; England and Farkas 1986; Blau, Ferber, and Winkler 1998). In particular, the cost of women's work is higher, due to childcare costs, the value of their income outside of employment is higher, due to higher transfers from other household members, and the value of their time in home production is higher (Sigle-Rushton and Waldfogel 2007). According to economists, these comparative advantages explain the sex-based division of labor at home and at work.

Economists recognize that a strict division of labor in the household is declining due to increasing female labor force participation and declining fertility (Blau, Ferber, and Winkler 1998). However, economists argue that women continue to have a

comparative advantage in household activities and that women will continue to specialize

in the home for the mutual benefit of the household. Thus, women are thought to be

more interested in jobs that offer part-time or convenient hours and may trade wages in

return for these types of schedules. Women are also thought to bring less effort to the

labor market or may select jobs that require less effort (Sigle-Rushton and Waldfogel

2007). Thus, women, when they work, are thought to have only marginal attachment to

the labor force, relatively discontinuous work careers, and less interest in "good" job

characteristics, such as high pay, benefits, and promotion possibilities (England and

Farkas 1986; Gangl and Ziefle 2009).

In this theory, the earnings gap between men and women persists because women

have less experience than men and tend not to invest in the kind of firm-specific skills or

human capital, such as education, that employers value, due to their focus on household

activities (England and Farkas 1986; Blau, Ferber, and Winkler 1998). A related theory,

the theory of compensating differentials, argues that the wage gap persists, in part,

because women are less willing to take undesirable jobs which pay more for that

undesirability. Sociological research demonstrates, however, that working conditions do

not account for the gender gap in wages (Jacobs and Steinberg 1995; McCrate 2005).

Under neoclassical microeconomic theory, we could develop a number of

theoretical expectations. First, because women are rational actors, we would expect that

they are more committed to household activities and caring work than men. Second, due

to women's specialization in household activities, we would expect that women will have

less labor market experience, more discontinuous work careers, and lower levels of

human capital than men. Third, we would expect that women's labor supply decisions are largely shaped by the marriage and motherhood roles, when the rational calculus of neoclassical theory should really kick in. In other words, we would expect that single women, having no "trading partner" would have employment levels and outcomes similar to men's. When women get married, their comparative advantage in household work strengthens, but the opportunity cost of not working is still relatively high. This should result in most married, childless women working. During childbearing and child raising, women's comparative advantage and reservation wage (or the minimum wage at which the income from working exceeds the "costs" from working) is at its highest, resulting in lower labor force commitment among mothers. These expectations are largely supported, but are made more stratified, by existing sociological evidence.

Research finds that women tend to be more committed to family, while men are more committed to work or are equally committed to work and family (Bielby 1992; Rothbard 2001). In particular, Bielby and Bielby (1989) find that married women who are employed give preference to family in balancing work and family identities, while married men have the discretion to build identification with both work and family roles. Furthermore, in later research, they find that wives in dual-earner couples are less willing than husbands are to relocate for a better job, because women's labor market outcomes are less important than men's for many couples (Bielby and Bielby 1989)   However, there is evidence that this differential commitment has weakened over time, especially for women with high levels of education and high work statuses and couples with nontraditional gender roles (Kaufman and Uhlenberg 1999).

The sociological evidence is also generally supportive of the expectation that women have more discontinuous work careers and lower levels of job tenure, with women being far less likely than men to have orderly and continuous work careers (Han and Moen 1999). As expected, this result is highly contingent on the marriage and motherhood roles, with being married and, more importantly, having young children significantly increasing the odds of discontinuities in women's work lives (Moen 1985; Stier, Lewin-Epstein, and Braun 2001). It has also been found that mothers are employed at significant lower levels than fathers (Misra, Budig, and Boechmann 2009). However, women have gained or are close to gaining equality with men in other human capital traits, especially education, calling into question the extent to which these traits influence women's negative employment outcomes (Tienda, Donato, and Cordero-Guzman 1992; England, Hermsen, and Cotter 2000).

Research reveals that marriage has a negative effect on women's labor supply, which conforms to expectations (Heckman and Macurdy 1980; Hyslop 1999; Stier, Lewin-Epstein, and Braun 2001). Orloff (2002) reports that about 60% of married women participate in the labor force, while 68% of single women participate in the labor force. On the other hand, marriage increases men's labor force activity by 3-4%. This result, however, is highly contingent on class background and labor force participation prior to marriage, with women in the working or lower class and women who worked prior to marriage being much more likely to participate in the labor force while married (Tienda, Donato, and Cordero-Guzman 1992; Hyslop 1999)

Research also reveals that over and above the effect of marriage, fertility and childcare responsibilities significantly lower rates of women's labor force participation, again conforming to expectations (Heckman and Macurdy 1980; Moen 1985; Hyslop 1999; Orloff 2002). Moreover, women's fertility decisions have been shown to influence their labor supply decisions, such that the number of children a woman has lowers her attachment to the labor force (Smith-Lovin and Tickamyer 1978; Brewster and Rindfuss 2000). This result, however, is contingent on age, with women being more likely to limit their fertility to accommodate their employment plans as they get older (Brewster and Rundfuss 2000).

However, the relationship between fertility and labor force participation is changing over time, with a well-documented decrease in fertility and a corresponding increase in women's labor force participation (England and Farkas 1986; Forest, Moen, and Dempster-Mclain 1995; Blau, Ferber, and Winkler 1998; Orloff 2002). Moreover, women's labor force participation is increasing even among young mothers, with the majority of the increase in women's employment over the last 10 years or so coming from this group (Esping-Andersen et. al. 2002; Jaumotte 2003). The relationship between fertility and women's labor force participation is also highly contingent on marriage, with single mothers having much higher rates of labor force participation than married mothers, expect for the long-term unemployed (Hao and Brinton 1997; O'Connor, Orloff and Shaver 1999).

There is also indirect evidence that the burdens of childcare influence women's labor force participation (Heckman 1974; Maume 1991; Averett, Peters, and Waldman

1997). The costs of childcare have been shown to decrease labor supply and increase job discontinuity among women (Heckman 1974; Maume 1991). It is perhaps not surprising, then, that the federal childcare tax credit, because it alleviates some of the cost associated with childcare, has been shown to increase women's labor supply (Averett, Peters, and Waldman 1997).

To this point, I have largely reviewed the literature on women's labor force participation. The research on the outcomes of women's employment tends to support these findings and confirm the expectations outlined above. First, research reveals that women make less than men. This is in part due to lower levels of human capital, but also because women have lower returns on human capital than men (Gangl and Ziefle 2009). Second, women are more likely to be in nonstandard or temporary jobs, revealing marginal and discontinuous attachments to the labor force (Kalleberg, Reskin, and Hudson 2000). Finally, research reveals that mothers make less than non-mothers, with larger penalties for married mothers (Budig and England 2001, Budig, Misra, and Boechmann 2009).

To sum up this section, the expectations of neoclassical microeconomic theory are largely supported by existing sociological evidence. However, the evidence reviewed also demonstrates that women have gained or are close to gaining equality with men in many human capital traits, especially education. These results call into question the extent to which neoclassical microeconomic theory can accurately predict women's negative employment outcomes, and suggests that other, more structural, factors may be at work.

2.4 Structuralist Explanations for Women's Employment Outcomes in the U.S.

There remains in all individual level labor market research a substantial gap in employment outcomes, particularly pay, that cannot be explained by focusing on women's caretaking responsibilities, labor supply decisions, and work and educational characteristics (England and Farkas 1986; Farkas, England, and Burton 1988; Jaumotte 2003; Gangl and Ziefle 2009). This has led many sociologists to argue the remaining gap, as well women's supply decisions, is best explained by structural and demand factors, such as employer discrimination, changing job conditions, and structural labor market considerations (England and Farkas 1986).

While structural researchers often appear to be, and sometimes think they are, arguing that individualistic explanations are flat wrong, they are in fact arguing that individualistic explanations, in general, and neoclassical microeconomic theory are incomplete, not wrong, because they fail to account for these structural and demand factors which influence women's labor supply decisions and status attainment (Farkas, England, and Burton 1988). In short, this literature argues that we need *both* individual and structural explanations to account for women's employment outcomes (Sorenson 1990). In the next section, I review the literature on these structuralist explanations, including structural labor market considerations, changing job conditions and employer discrimination.

There is a large literature on structural explanations for women's employment outcomes. This literature is generally done at three levels of analysis: macro-structural changes in the economy, segmented labor markets and the quality of employment in the

various labor market segments, and firm or employer-level demand for employees. The macro-structural literature is reviewed first and focuses on broad changes in the economy as the catalyst for both rising levels of labor force participation among women and women's poor employment outcomes. Second, I review the literature on segmented labor markets, which postulates that the labor market is split into two or more segments with differential employment outcomes for employees in each segment. Finally, I review the literature on sex segregation at the firm or employer level and its impact on gender inequality.

It is important to keep in mind that while I discuss these levels of analysis separately in this section, they, in fact, work in conjunction with each other to impact women's employment outcomes. By way of brief example, the rising employment in the service sector, described below, is dominated by women, contributing to women's rising levels of labor force participation. Women are largely segregated into these jobs due to employer demand and discrimination. However, these jobs are primarily located in the secondary labor market and are associated with lower pay and benefits, contributing to women's employment inequality.

2.4.1 Growth of the Service Sector Economy

While the structural changes in the economy are complex in origin and deserve a complete description, I am limiting my discussion to a brief sketch in this section because I am more interested in the impacts of these changes on women's employment outcomes. The macro-structural change most credited with pulling women into the labor force and

with perpetuating gender inequality is the decline in the manufacturing sector, a sector historically dominated by men, and a corresponding rise in the service sector, in which women are concentrated (Kalleberg and Sorensen 1979; Rubin 1996; Berg and Kalleberg 2001). During the immediate post-war years, productivity and employment were centered in the manufacturing sector. Jobs in this sector were predominately unionized, with good pay and benefits (Rubin 1996). These jobs were dominated by men, and women largely specialized in home and caring work (England and Farkas 1986).

However, by the 1970's, due to a mixture of increasing competition from cheaper imported products and international firms, rising costs, and technological changes; productivity and employment shifted away from the manufacturing sector to the service sector (Rubin 1996). Service sector jobs generally required fewer skills and were consequently lower paying, with lower levels of benefits and job stability. Rubin (1996), however, has identified a segment of the service sector, primarily the technology and administrative/management occupations, that are associated with better paying, more stable jobs. Women tend to be concentrated in the lower levels of the service sector, while men moved into the most desirable service sector occupations, due to the process of sex segregation described below.

The turbulence in the labor market resulting from these structural changes has tended to push men either out of the labor force or towards jobs in the service sectors while pulling women, and nonwhites, into employment (Diprete and Nonnemaker 1997). This has resulted in declining real wages for men and increasing real wages for women, which has contributed to rising labor force participation among women and has decreased

but not closed the pay gap (England and Farkas 1986; Orloff 2002). This increase is not

constant, however, with research revealing that women and nonwhites are particularly

susceptible to cyclical recessions that are endemic in the "new economy" (Diprete 1981;

Cummings 1987). This trend may have reversed, however, with recent research by the

Bureau of Labor Statistics finding that men lost the vast majority of jobs in the current

recession in the U.S., and that women are on the verge of outnumbering men in the

workforce for the first time (Cauchon 2009) From this brief sketch, a picture emerges of

the impact of changes in the economy in which women are pulled into the labor force by

rising levels of employment in the service sector. However, the low-paid and unstable

nature of jobs in this sector has resulted in the relatively poor employment outcomes of

women.

Researchers have identified a number of changes related to these structural

changes that influence women's employment outcomes. Already mentioned are the

rising real wages of women and the declining wages of men (England and Farkas 1986;

Orloff 2002). Another notable change is the declining significance and power of unions

to shape employment outcomes. While unions in the U.S. have historically been opposed

to women's employment (this is not true in many other countries), their presence and

power tends to raise wage levels for their members and other employees in a sector

(Rubin 1996; Berg and Kalleberg 2001). Thus, the decline of unions has brought more

women into the labor force, but has also contributed to rising levels of income inequality.

Federal policies and practices, such as the EEO and job training programs, have worked

to equalize employment opportunities for women and minorities; however, the impact of

these interventions has declined over time due to retrenchments in these policies and programs (Diprete and Grusky 1990).

Finally, increasing employment in the service sector has resulted in increasing levels of nonstandard employment, such as temporary, contract, or part-time employment, due to the flexible and unstable nature of the work in this sector (Kalleberg, Reskin, and Hudson 2000). Because women are concentrated in this sector, employment among women is frequently characterized by nonstandard employment situations (Evans 2002).

2.4.2 Segmented Labor Markets

The sociological research on segmented labor markets contends that the labor market is split into two or more segments, with different employment outcomes associated with each segment. This literature developed as an explicit critique of neoclassical economic theories concerning the impact of human capital on employer demand and the presumption of a single, perfectly competitive labor market (Kalleberg and Sorensen 1979).

Segmented labor market theories argue that the labor market is split into two or more labor markets, with different employment outcomes for workers in each segment. The dual labor markets are the primary labor market, also called the closed labor market, and the secondary labor market, also called the peripheral or open labor market (Piore 1970; Hodson and Kaufman 1982; Coverdill 1988). The primary labor market is characterized by internal labor markets, which are described in detail below, with stable

jobs with good pay, benefits, flexibility, and return on education and human capital. Secondary labor markets, on the other hand, are characterized by unstable jobs with low pay, few or new benefits, and little return to education and human capital (Doeringer and Piore 1971; Hodson and Kaufman 1982). These theories argue that there is little movement between these two labor markets, especially from the secondary to the primary labor market (Piore 1970).

Most importantly, these theories argue that these dual labor markets are associated with social divisions of labor such that women and minorities are segregated into the secondary labor market, while men dominate in the primary labor market (Doeringer and Piore 1971; Hodson and Kaufman 1982). Positions in the secondary labor market have been shown to be particularly harmful to women's wage attainment (Eliason 1995). A number of different processes were implicated as the cause of this division. Most prominent among these explanations are race and gender discrimination on the part of employers, which segregates women and racial minorities in the secondary labor market (Piore 1970; Doeringer and Piore 1971). This explanation will be investigated in more detail below.

The early versions of segmented labor markets theory, and the empirical work associated with them, have been criticized by both economists and sociologists for failing to form a complete and testable theory, as being inadequate to sustain theoretical and empirical development, and for enforcing too strict of a conception of labor market segmentation (Cain 1976; Hodson and Kaufman 1982). Most importantly, the empirical work using this theory failed to find consistent evidence of dual labor markets, nor could

it find consistent effects of labor market segmentation on gender or racial stratification (Coverdill 1976; Hodson and Kaufman 1982). In response to these critiques and empirical failures, more recent theorists have argued that the labor market has three or more segments and have attempted to more formally develop theories about the origins and effects of these segments (*c.f.* Edwards 1989). While Edwards' (1989) and other similar conceptions of the labor market have been criticized on much the same ground as previous segmented labor market theories, it is now widely accepted by sociologists that the labor market is split into some number of segments.

Internal labor markets are one of the defining features of the primary labor market. These internal labor markets can be defined as "an administrative unit within which the pricing and allocation of labor is governed by a set of administrative rules and procedures" (Doeringer and Piore 1971:3). The internal labor markets' interconnection with the external labor market is limited to specific "ports of entry", or entry level jobs, and all other jobs are filled by promotion or transfer of workers already with the internal labor market (Doeringer and Piore 1971; Osterman 1984). In internal labor markets, wage relationships, internal allocation procedures, and pricing tend to be relatively rigid and are generally insulated from the dynamic economic forces of the external labor market (Doeringer and Piore 1971; Diprete 1989).

Internal labor markets have been documented in both "blue-collar" and "white-collar" occupations, with most of the evidence coming from the latter (Edwards 1989; Diprete 1989). "White collar" internal labor markets are frequently split into clerical and administrative job ladders, with clerical job ladders below the administrative job ladder in

terms of pay and prestige (Diprete 1989). The defining characteristics of employment in

internal labor markets are job stability and steady promotions up the job ladder with

increasing pay and benefits associated with these promotions (Osterman 1984; Edwards

1989).

The literature on internal labor markets reveals that women in the primary sector

who are in internal labor markets continue to be disadvantaged relative to men due to the

workings of internal labor markets. This result is unexpected because these women

would seem to have "made it" out of the secondary labor market and should,

consequently, be relatively equal to men. Some of this disadvantage results from lower

seniority relative to men because the majority of women were only more recently able to

enter jobs with job ladders (Diprete 1989). It also results from the tendency of women to

enter job ladders at lower levels than men (Diprete 1989). Moreover, women are

concentrated in clerical job ladders with lower rates of promotion and pay than men, who

tend to be concentrated in administrative ladders (Diprete and Soule 1988). Finally,

women have a harder time moving from the clerical to administrative job ladders than

men, with the greatest female disadvantage occurring near the border of these two ladders

(Diprete and Soule 1988; Eliason 1995).

More recent research has argued that internal labor markets are breaking down

across wide swaths of the labor market due to a variety of factors including increased

competition, changing product markets, new management practices such as the use of

outside search firms, decreasing job attachment, and larger roles of nonstandard and

contingent workers (Cappelli 2001). The transition away from internal labor markets is

clear. Yet, what remains to be seen is whether the primary labor market will disappear completely, or whether it will continue to exist, but be characterized for employees as a succession of "good" jobs in the same or related industries.   Research is just beginning to address these issues (Cappelli 2001).

2.4.3 Occupational Gender Segregation

The third structural/demand-based explanation for women's employment disadvantage implicates the massive segregation of men and women into different jobs and occupations, even within the same firm. Bielby and Baron (1985; 1986), for example, find nearly perfect segregation between men's and women's jobs, with very few job titles having any level of gender integration. Again, the important implication of this segregation is that women tend to be segregated into jobs and occupations that pay less than men's jobs and occupations, thereby perpetuating gender inequality (Gunderson 1989).

Sociologists have measured sex segregation at either the occupational or job level, although they sometimes use these terms interchangeably. Occupational sex segregation is the most frequently used measure and refers to the segregation of men and women into different occupations, based on categories derived from the U.S. census. Job segregation refers to the segregation of men and women into different jobs within a firm (England 1981). Both types of segregation are related to the pay gap between men and women, but each type of segregation is traced to different causes, and trends in segregation vary depending on the measure (Reskin 1993). The level of sex segregation in a particular job

or occupation is generally measured using the index of dissimilarity. When computed across occupational categories or job titles, the value of the index tells the percentage of either men or women who would need to change occupations or jobs in order to reach the same sex mix exhibited by the labor force as a whole (England 1981).

With great difficulty, due to bad data and poor measures, sociologists have attempted to measure trends in sex segregation in the United States. This research generally finds that occupational-level sex segregation has tended to decline, with major declines in the 1960s and 1970s (Blau and Hendricks 1979; England 1981). However, the pace of integration slowed in the 1980s, and by the early 1990s, few occupations had sex compositions resembling the labor force as a whole (Reskin 1993). We must be cautious, however, in inferring workplace integration from declines in occupational segregation. Not only has the drop in occupational segregation masked job-level segregation, but the door to sex-atypical jobs is a revolving one with many women returning to traditionally female jobs or occupations after leaving for traditionally male jobs or occupations (Bielby and Baron 1985; Bielby and Baron 1986; Reskin 1993).

The extent of sex segregation in the economy has spurred much research into the causes and consequences of this sex segregation. One important avenue of investigation is how the increasing numbers of women entering the labor force has impacted sex segregation. There are two competing hypotheses: competition, in which an increased presence of women or other minority groups triggers a competitive process which lowers wages and drives men out of the occupation, and segregation, in which women are shuttled into lower paying jobs to begin with (Snyder and Hudis 1976; Tienda, Smith,

and Ortiz 1987; Semyonov and Lewin-Epstein 1999). The empirical literature is unclear about which of these processes are in play, with Semyonov and Lewin-Epstein (1999), using data from Israel, and Snyder and Hudis (1976), using U.S. census data from 1950-1970 arguing that the competition hypothesis finds the most support. Yet, Tienda, Smith, and Ortiz (1987), using 1970 and 1980 U.S. census data, argue that the segregation hypothesis most closely conforms to their results. More recent research seems to back to the segregation hypothesis, although it does not directly address this distinction (Evans 2002; Correll, Benard, and Paik 2007).

While Bielby and Baron (1985, 1986) argue that sex segregation does not always result from differences in job characteristics, with job descriptions often overlapping substantially between job titles dominated by women and job titles dominated by men, a substantial amount of research has focused on the characteristics of jobs and women's lives as important causal explanations for sex segregation. One explanation in this view is that women tend to choose jobs that accommodate caregiving duties, such as those with flexible schedules and easy job tasks. Empirical research of this explanation, however, is mixed. Glass and Camarigg (1992) find that female jobs, in general, and the jobs that mothers are employed in, in particular, are less likely to possess clusters of job characteristics that reduce work-family conflict. Men with no dependent children are more likely than women with dependent children to be in jobs with so-called "family-friendly" characteristics (Glass and Camarigg 1992). On the other hand, Gangle and Ziefle (2009) find that work interruptions caused by motherhood and subsequent mobility

into more "mother-friendly" jobs fully accounts for the motherhood wage penalty in the U.S. and the U.K.

Another explanation along these lines is that occupations in which women dominate are easier for women to reenter after labor force interruptions for childbearing and childcare. The evidence for this explanation is mixed. Waite and Berryman (1986), in an indirect test, found that being in a non-traditional occupation does not increase the chances that a young woman will leave her current employer. On the other hand, research that directly investigates this explanation finds that women's occupations are in fact easier to reenter for both men and women (Gangl and Ziefle 2009). This "benefit" comes with a price as women's occupations are also found to offer limited opportunities for upward status mobility (Gangl and Ziefle 2009).

As previously discussed, the economic literature that discusses gender segregation argues that women's lower levels of human capital and other supply-side characteristics are the important explanations for women's employment outcomes, including sex segregation. However, in her review of the literature, Reskin (1993), argues that supply-side explanations, such as gender role socialization, differential occupational aspirations, and human-capital explanations are not well supported by the sociological evidence. She places the blame for sex segregation, instead, squarely on the shoulders of demand factors, most notably employer's preferences and discrimination.

Sociological research and theory have focused extensive attention on issues of employer's preferences and discrimination. Reskin and Roos (1991) argue that employers construct queues that rank potential employees from most desirable to least

desirable. However, individual differences between workers are only taken into account

within groups defined by gender and race. Importantly, in this theory, men are almost

always ahead of women in employers' queues (Reskin and Roos 1991). Simultaneously,

workers maintain their own job queues, ranking jobs in terms of attractiveness. Reskin

and Roos (1991) argue that when employers' ordering, the relative supply of groups in

that ordering, and employers' and workers' queues overlap, occupational sex segregation

is stable. However, when those preferences diverge due to structural, institutional, or

human capital requirements, occupational sex integration occurs. Men's continuously

privileged ranking over women in the labor queue facilitates their movement out of

occupations losing status and their successful search for alternatives, while women, due

to their lower rank in the queue, are segregated into jobs with lower status and pay

(Reskin and Roos 1991). Reskin and Roos (1991) find support for this theory using

census data and 14 case studies[7].

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[7] An integral part of queuing theories are theories concerned with how gender roles and norms are
perpetuated through interaction. Sociologists Barbara Reskin and Cecelia Ridgeway have argued that
gender inequality is perpetuated in everyday social interactions. They argue that because each gender
makes up about half the population, interactions between the genders occur frequently (Ridgeway and
Smith-Lovin 1999). Unlike interactions between the races (Emerson and Smith 2000), these interactions
do little to break down differences between the groups because in social interactions, each actor
automatically sex-categorizes the other(s) in the interaction. Social cognition theory explains that this
categorization is accompanied by stereotypes about behaviors, statuses, and roles that shape the
expectations of actors in the interaction (Ridgeway 1991; Ridgeway 1997; Reskin 2000; Reskin 2003).
This expectation is supported by social psychological research, which finds that people perceive gender
differences to be pervasive in everyday interactions (Ridgeway and Smith-Lovin 1999).
Interactions between the genders typically occur in structurally unequal contexts, such as the workplace or
families, in which gender differences have already been assigned to unequal or distinct positions
(Ridgeway 1991; Ridgeway 1997; Ridgeway and Smith-Lovin 1999; Reskin 2000). Social psychological
research confirms that this combination of sex-categorization and structurally unequal positions perpetuate
and justifies status beliefs through positive reinforcement (Ridgeway and Smith-Lovin 1999). That is, the
bulk of interactions that take place between men and women conform to their preexisting stereotypes and
ideas about the way the opposite gender ought to act and the structural position they ought to be in, which
reinforces that normative position and the status quo. Interactions that do not conform to these expectations
are quickly discarded as not normal or deviant (Ridgeway 1991; Ridgeway and Smith-Lovin 1999).
Operating in the workplace environment, this self-reinforcing process perpetuates inequality by driving the

This process of the reproduction of gender inequality through social interaction and queuing is thought to result in, and is a result of, employers' discriminatory preferences. The most common form of discrimination discussed in the literature is statistical discrimination on the part of employers. In the economics literatures, statistical discrimination is defined as a process by which employers' judge individual job applicants based on actual or perceived differences in the average characteristics of the group (Cain 1986; Blau, Ferber, and Winkler 1998). In other words, employers use their knowledge or ideas about average differences in productivity, performance, or attitudes between groups to judge the qualifications of individuals from those groups. It easy to see how statistical discrimination results in sex segregation, with employers believing that some jobs, usually inferior ones, are better suited for women and some jobs, usually better ones, are better suited for men, especially when the majority of managers are men (Bielby and Baron 1985; Bielby and Baron 1986).

A recent laboratory based experiment reinforces this point. In the experiment, participants evaluated application materials for a pair of same-gender equally qualified job candidates who differed on parental status (Correll, Benard, and Paik 2007). The researchers found that mothers were penalized on a host of measures, including perceived competence and recommended starting salary. Men were not penalized for, and sometimes benefited from, being a parent. In the same article, Correll and co-authors conducted an audit study that found that actual employers discriminated against mothers but not fathers (Correll, Benard, and Paik 2007).

gender-labeling, and segregation, of jobs, meditating men's and women's willingness to settle for employment outcomes and their perceptions of alternatives, and contributing to employer's discriminatory preferences (Ridgeway 1997).

As described above, sex segregation impacts women's employment outcomes, not just by shuttling men and women into different jobs and occupations, but also because the occupations and jobs that women are segregated into tend to be rewarded at lower levels with fewer benefits, are less stable, and offer fewer opportunities for advancement and promotion than men's jobs (Gunderson 1989; England 1992; Diprete 1989). In fact, occupational sex segregation has been shown to account for the majority of the wage gap between men and women in the United States (Gunderson 1989). Research has demonstrated that it is not that women and men do jobs with different tasks that leads to this reward gap, but rather, it is the fact that women are concentrated in a job that causes these poor employment outcomes (England 1992). That is, men and women are segregated into different occupations and jobs, but even in jobs with the same tasks, women make less than men (Bielby and Baron 1985; Bielby and Baron 1986; Tienda, Smith, and Ortiz 1987; England 1992).

Research into the causes of this reward differential has focused on the devaluation of women's work relative to men's (Nelson and Bridges 1999). This devaluation is found to result, in part, because women dominate in occupations associated with caring work, or occupations in which workers provide a "face-to-face service that develops the human capabilities of the recipient, such as teaching, counseling, health care, and childcare" (England, Budig, and Folbre 2002: 455; England, Thompson, and Aman 2001). The evidence reveals that care work pays less than other work, net of human capital and industry characteristics, regardless of gender. However, because women

dominate in "caring work", they are disproportionately penalized (England, Budig, and Folbre 2002).

However, the devaluation of women's work is also found to occur in occupations in which women are concentrated regardless of the type of work they do (England, Thompson, and Aman 2001). England (1992) contends that this reveals a general cultural devaluation of work performed by women, regardless of the characteristics of the work. This finding is supported by the careful work of Nelson and Bridges (1999). In this section, I have summarized the structural explanations for women's employment outcomes. I have reviewed this literature at three levels of analysis; macro-structural changes in the economy, segmented labor markets and the quality of employment in the various labor market segments, and firm or employer-level demand for employees. As described in the previous section, it is important to keep in mind that this literature and the literature focused on individual explanations are largely complementary. We need *both* individual and structural explanations to account for women's employment outcomes in the United States. In the next sections, I describe women's employment outcomes in the comparative perspective, focusing on Germany and Sweden.

2.5 Individual and Structural Explanations in Comparative Perspective

In this section, I focus on the comparative literature on individual and structural explanations for women's employment outcomes. First, I examine the comparative literature, focusing on sex segregation across countries and the impact of economic development on women's labor force participation and employment outcomes. Next, I

61

examine the intersection of structural and individual factors explaining the employment outcomes of women in Germany and Sweden.

2.5.1 Comparative Literature

Because it compares explanations across countries, the comparative literature tends to focus on broad, country-level differences in the economies, labor markets, firm-specific, or individual explanations for women's employment outcomes, rather than on within-country differences. In this literature, the state is seen an important "shaper" of labor markets and the dynamics of income and consumption, and consequently plays an important role in women's employment outcomes and life chances, family cycles, fertility decisions, etc. (Mayer and Schoepflin 1989). As such, the majority of the comparative literature is subsumed under the welfare state literature, which is directly interested in the role of state policies, structures, and institutions and has previously been described. Two issues, however, are directly related to structural and individual explanations for women's employment outcomes: sex segregation across countries, and the impact of economic development.

This literature on comparative sex segregation is fairly recent, but still extensive, and has largely been concerned with the extent to which one could argue there is a worldwide sex segregation regime. The most productive work in this area has been done by Charles and Grusky (2001; 2004; Charles 1992). They argue that sex segregation is really made up of two components: horizontal sex segregation and vertical sex segregation. Horizontal segregation refers to the segregation of men and women along

the manual-nonmanual occupations divide, with men being concentrated in manual

occupations and women being concentrated in nonmanual occupations. Vertical

segregation refers to the tendency of men to occupy the most desirable occupations on

each side of the manual-nonmanual divide (Charles and Grusky 2004). Either of these

types of segregation could result in reward differentials in men's and women's jobs.

According to Charles and Grusky (2004), the structures that cause these two types

of segregation are many and varied, but the key points of their argument are: that

horizontal segregation is caused by the task requirements of manual and nonmanual jobs

and the correspondence of these task requirements with gender essentialism, or the

individual traits regarded as essentially male or female; and that vertical segregation is

primarily related to beliefs in male primacy or superiority (Grusky and Charles 2001;

Charles and Grusky 2004). They further contend that the spread of gender-egalitarian

values has undermined vertical, but not horizontal, segregation. Moreover, economic

forces, such as the expansion of the service sector, have tended to draw women workers

into the lower levels of nonmanual occupations, reinforcing both vertical and horizontal

sex segregation. Importantly, this structure does not seem to be strongly influenced by

supply-side characteristics, such as marriage (Roos 1983; Reskin 1993; Charles and

Grusky 2004).

From their analysis of cross-national variability in occupational sex segregation at

one point in time, and the evolution of sex segregation over time in the United States,

Japan, and Switzerland, Charles and Grusky (2004; Grusky and Charles 2001) argue that

there is a deep structure of segregation that holds across all countries. In this structure,

women are overrepresented in nonmanual occupations, while men tend to dominate the most desirable occupations, with the highest rewards, in both manual and nonmanual occupations. However, there exists extensive variations in the structure of sex segregation across countries at the level of detailed occupational groupings, reflecting the "loose coupling" of sex segregation regimes amid national differences in cultures, politics, and institutions (Charles and Grusky 2004: 301; Grusky and Charles 2001). Charles and Grusky (2004) also investigate why sex segregation persists considering the rapid expansion of egalitarian beliefs in many countries (Treas and Widmer 2000). They argue that the effects of these attitudes differentially impact horizontal and vertical segregation. In particular, egalitarian cultural ideals have proven to be compatible with gender essentialist occupational distinctions, and postindustrial economic restructuring has increased the flow of women into jobs toward the bottom of the nonmanual occupational hierarchy.

Another major puzzle investigated in this literature is why countries with high levels of gender equality, such as the Scandinavian countries, have extremely high levels of gender segregation, even higher than countries with traditional divisions of labor such and Japan and Italy. Charles (1992), in earlier work, argues that the same economic structures, such as the growth of the service economy, that are associated with women's greater integration into the formal labor force also contribute to a deepening of the institutionalization of gender within the occupational structure. Similarly, Charles and Grusky (2004) argue that countries with high levels of gender equality continue to manifest high levels of occupational sex segregation because horizontal segregation is

particularly strong there. In other words, women have tended to be drawn into the lower-level nonmanual sector, which has, consequently, become increasingly sex segregated. This reflects a "different but equal" work norm in these countries (Charles and Grusky 2004).

Other researchers have argued that the high levels of gender segregation in gender egalitarian countries results from differential rates of pay between the private and public sector for men and women. In research on Norway, Hansen (1997) finds that men have greater earnings advantages if they choose occupations in the private sector, while the earnings advantages for women in the private sector, compared to women in public sector occupations, are far lower. Further, the earnings of women in private sector are lower for women with childcare responsibilities, while no effects of childcare responsibilities are found among women in public sector occupations. Thus, men can maximize their pay be entering the private sector, while women and particularly mothers can maximize their pay by working in the public sector. Finally, Mandel and Semyonov (2005; 2006) argue that the presence of generous family policies, which will be discussed in detail in later chapters, causes segregation in the labor market. However, they do not examine the processes through which the effect occurs (Mandel and Semyonov 2005; 2006). (Also see Evans (2002) along these lines.)

The comparative literature has also been interested in the impact of economic development on women's labor force participation. This literature generally incorporates both developed and developing countries, something that most comparative research does not do. This research finds that a U-shaped relationship exists between economic

65

development and women's labor force participation (Pampel and Tanaka 1986; Mammen and Paxson 2000). In less developed countries, female labor force participation is high, and women work mainly in farm or other family enterprises. Economic development initially moves women out of the labor force because of the increase in men's market opportunities and social barriers against women entering the paid labor force. However, as countries continue to develop, women's education levels rise, and women move back into the labor force as paid employees holding mainly white-collar, service sector jobs (Pampel and Tanaka 1986; Mammen and Paxson 2000). Semyonov (1980), on the other hand, finds that economic development is mediated by income inequality, such that when income inequality is high, women are less likely to enter the labor force. Moreover, he finds that increasing women's labor force participation, whatever the cause, results in decreasing odds that women will be found in high status, well-paid occupations (Semyonov 1980).

2.5.2 Explanations for Women's Employment Outcomes in Germany

I devote my attention in the rest of this section to describing the intersection of individual and structural factors in Germany and Sweden. I do this to provide some comparison to the heavy focus on the United States in the previous section. I chose these countries because they are always in different 'regime' types and represent qualitatively different sets of institutions, structures, and policies, as well as individual and structural contexts that influence women's employment outcomes in fundamentally different ways. While there are advantages to focusing on this subset of countries, I do run the risk of

emphasizing the differences or similarities between these countries as the most important or salient, when, in fact, there may be more salient differences or similarities between alternative sets of countries, depending on the issue under consideration.

In this section, I review the individual and structural explanations for women's poor employment outcomes in (West) Germany. Labor force participation and employment outcomes among women are increasing in Germany. However, rates of employment and the pay gap tend to be larger in Germany than in the United States and Sweden. Much the same explanations are thought to influence women's participation and wages in Germany as in the United States. As in my review of the U.S. literature, I first review the literature on individual explanations and then structural explanations. I next review the small literature comparing both the former East and West Germany, and then the more substantial literature comparing the United States and Germany.

As in the United States, women are increasingly entering the labor force, postponing marriage, and lowering their fertility rates (Franz 1985; Blossfeld 1987). This delay in marriage and declining fertility is shown to be an effect of increasing levels of education among women. In other words, as women have entered education and attained higher educational degrees, they have delayed the marriage and motherhood roles (Blossfeld and Jaenichen 1992).

In addition, the German education system is implicated in explanations of the pay gap between men and women. The system of education in Germany is different from the United States, focusing on vocational training followed by apprenticeships. Jobs with long apprenticeships generally result in higher job grades and pay. However, women are

less likely to enter jobs requiring extensive vocational training; therefore, they tend to enter the labor market lower job grades with lower pay (Blossfeld 1987; Rubery et. al. 1997). Research has also demonstrated that higher levels of education increase women's wages, but only in the first job. However, men see benefits from their education over their entire career. Moreover, highly educated women do less well than other women when changing jobs, which is consistent with the view that occupational advancement for such women is impeded by a "glass ceiling" effect (Hannan, Schomann, and Blossfeld 1990).

Research on individual explanations has also focused on the marriage and motherhood roles in (West) Germany. This research reveals that German women are strongly affected by the marriage and motherhood roles, such that these roles cause women to drop out of the labor force at fairly high rates (Franz 1985; Drobnic, Blossfeld, and Rowher 1999). This effect is due, in part, to the prevalence of social norms that mothers of small children belong at home and that mothers of school-age children should work only part-time (Treas and Widmer 2000). It is important to note that all of these results are shown to be highly contingent on various aspects of time in addition to gender and human capital characteristics, with the attainment process depending on time spent in the labor force, historical time of entry into the labor market, and actual historical time (Blossfeld 1986; Blossfeld 1996).

Structuralist explanations for women's employment outcomes also receive support in the literature. Blossfeld and Mayer (1998) argue that the German economy is segmented into four distinct labor markets: the secondary labor market in small firms, the

secondary labor market in large firms, the craft-specific labor market based on vocations and vocational training, and the firm-specific, internal labor market. They further argue that these four segments structure occupational careers to such a large extent that they satisfactorily describe labor market chances in Germany, and have profound effects on initial wages and wage gains due to job changes (Blossfeld and Mayer 1988; Hannan, Schomann, and Blossfeld 1990).

As in the United States, women are more likely to be in the secondary labor markets and are shown to be segregated into female typed jobs that pay less, with mothers with care responsibilities especially vulnerable to segregation (Blossfeld 1987). The education system is argued to have powerful affects on sex segregation. In sum, the (West) German system of labor force allocation depends heavily on a system of vocational education and apprenticeship in which young men and women tend to be placed in nonoverlapping, sex-typed career lines (Hannan, Schoman, and Blossfeld 1990). Unlike the United States, internal labor markets are not particularly important in the German context, with research demonstrating that only 16 percent of labor market processes are mediated through internal labor markets and workers do not receive a substantial wage payoff for being in internal labor markets (Hannan, Schoman, and Blossfeld 1990; Blossfeld and Mayer 1988).

Other structural factors have also been shown to influence women's employment outcomes. The German payment structure has been shown to create atypical and part-time work for women, which generally results in lower pay (Rubery et. al. 1997). The German joint taxation system, in which the aggregated income of a married couple is

divided in half and then taxed twice, like two separate incomes, has been connected to low levels of women's labor force participation. This system has been shown to benefit married couples in which the husband has a moderate to high income and the wife works in the household, thus encouraging women to stay out of employment and perpetuating gender inequality in the workplace (Soler-Roch 1999).

Research which compares women's employment outcomes in the former East and West Germanys is useful for understanding women's employment outcomes in Germany. This literature finds that the parent role has a stronger effect on earnings in West Germany than it did in East Germany (Trappe and Rosenfeld 2000). This result is most likely due to more generous family benefits and policies in the former East Germany. However, this does not mean that gender equality was achieved in the East. Research demonstrates that in the former East Germany, women continued to be segregated into jobs that paid less then mens'. This pay gap was most likely due to discrimination in pay-setting (Sorensen and Trappe 1995). As in the United States, segregation in both the former West and East Germanys does not seem to be the result of supply side characteristics (Trappe and Rosenfeld 2004).

There has also been a useful literature comparing the United States and Germany. Thomas Diprete and his colleagues have leveraged comparable panel data to make systematic comparisons between the two countries. This literature generally finds that women in both countries are particularly susceptible to negative events, such as divorces, lay-offs, or job breaks, and that women tend to lose more status and income in these events than men. However, this research also demonstrates that the German social and

economic system is generally better at insulating women, and helping them recover, from these events (Diprete 2002; Diprete and Mcmanus 1996).

In general, German workers are better at recovering earnings losses than American workers and American workers are more susceptible to earnings declines. However, German workers, and women especially, pay for this stability with lower earnings gains and a more muted class structure (Diprete and McManus 1996). Moreover, while unemployment is more transitory in the U.S. than in Germany, the German welfare state and social benefits do a better job of sheltering citizens from the negative effects of unemployment (Diprete and McManus 1996; Diprete and McManus 2000). Women in Germany also tend to be better protected, in the long run, from divorces and partner losses, but do suffer more in the short run (Diprete and McManus 2000). Finally, research also reveals that women in Germany are more likely to leave the labor force due to family demands than women in the United States. But part-time work, which women use to balance work and family demands, is more stable and is paid better in Germany than in the United States (Drober, Blossfeld, and Rohwer 1999). Finally, recent work comparing Britain, Germany, and the U.S. finds that while the motherhood wage penalty is lower in Germany, statistical discrimination against women plays a comparatively more pronounced role in the German labor market than in the other two labor markets (Gangl and Ziefle 2009).

2.5.3 Explanations for Women's Employment Outcomes in Sweden

The employment outcomes of women in Sweden are heavily influenced by social policies. However, there is only a small literature concerned with individual and structural explanations for women's employment outcomes in Sweden. This literature reveals that while there remains a small gender gap in pay and benefits, there is substantial equality between men and women in employment outcomes in Sweden, especially when compared with Germany and the United States. Women's rates of labor force participation nearly equal mens' in Sweden, with high rates of participation even for young women with children, and women's real wages have been increasing. Moreover, educational attainment is increasing among women and rates of marriage are decreasing (Gustafasson and Jacobsson 1985; Duvander 2000). Rates of fertility, however, have stayed relatively constant, due to the generous support that Sweden provides for families (Duvander 2000).

This literature has documented relatively high rates of sex segregation (Charles 1992, Charles and Grusky 2004). However, reflective of a "different but equal" norm in Sweden, this sex segregation does not seem to influence gender equality in the same way that it does in other countries (Charles and Grusky 2004). Social attitudes are supportive of women's employment, even for young mothers with children (Treas and Widmer 2000). Finally, tax systems and workplace supports, such as family policies, help to increase women's employment equality and lower the psychological strains that result from work and family conflicts (Soler-Roch 1999; Moen and Forest 1990). In short,

unlike in Germany and the United States, individual and structural factors align to support, rather than work against, women's relative employment equality.

However, social commentators have argued that the deep Swedish recession of the 1990s hit women particularly hard and has threatened women's gains. In particular, the decentralization of wage bargaining in Sweden has lowered real wages and caused significant turbulence in the labor market for both men and women (Pontusson and Swenson 1996). Moreover, the retraction and restructuring of welfare state benefits and cuts in public employment, in which women are concentrated, has resulted in lower rates of employment and shorter worker hours, as well as lower pay, for women workers, relative to earlier periods (Gonas 1998). Sweden, however, continues to maintain high levels of equality for women relative to other countries and women are gaining back some of the ground they lost as Sweden has moved out of the recession (Esping-Andersen et. al. 2002).

2.6 Conclusion

In this chapter, I reviewed the two literatures that have built parallel sets of explanations for women's employment outcomes. First, I reviewed the existing literature on the welfare state in order to highlight the important role that welfare state institutions, structures, and policies have in the creation and maintenance of gender inequality across advanced industrialized countries. Toward this end, I reviewed the larger literature surrounding the development and crisis of the welfare state, including the literature on the development of the welfare state. Next, I described the idea of welfare state regimes,

73

focusing on Esping-Andersen's (1990) now dominant tripolar typology. Finally, I turned to the recent literature on the crisis of the welfare state, arguing that while the welfare state is definitely in a new period of fiscal austerity, welfare states have been particularly resilient to retrenchment. I concluded that the literature has largely settled on post-industrialism and the service sector trilemma as the dominant causal mechanism behind this new period of austerity.

In the next sections of this chapter, I reviewed the large literature that argues that individual and structural factors such as women's labor supply decisions, changes in the economy, the labor market, and sex segregation are the most important explanations for the women's relatively poor employment outcomes. I then turned to a review of the literature which has developed around structural explanations for women's employment outcomes. I focused on changes in the economy, arguing that the growth of the service sector has brought women into the labor force, as well as an explanation for their lower pay. I then described the segmented labor markets literature, which argues that the labor market is split into two or more segments, with different job characteristics in each sector. Finally, I focused on the literature concerning sex segregation, which focuses on explanations for the segregation of men and women into different jobs and for the lower pay associated with women's jobs.

Throughout this chapter, I emphasized that the individual and structural explanations are complementary systems of explanation, such that both factors work in interaction to create and reinforce the existing system of gender stratification. I next reviewed the international and comparative literature on women's employment outcomes,

focusing specifically on Germany and Sweden and the small literature that exists on

causal variations among women's employment outcomes in these countries.

In the next chapter, I will describe the data used throughout the following chapters, the

variables used in the analysis, and the methods used. In the fourth chapter, I integrate the

two literatures reviewed in this chapter into a well-rounded description of women's

employment outcomes across international contexts. It is in these later chapters that I

will demonstrate how women's employment outcomes are influenced by both sets of

explanatory factors across advanced industrialized countries using descriptive statistics

and linear mixed models.

Chapter 3. Description of Data, Variables, and Statistical Methods

3.1 Introduction

In this chapter, I describe the data used throughout the following chapters, focusing in particular on the variables used in the descriptive and explanatory analysis, and the statistical methods used in the subsequent chapters. I describe the countries and time period covered in the dataset I created, along with the detailed process of secondary data collection used. Next, I turn to a detailed description of the variables used in this dissertation. I first describe the dependent variables I use to measure women's employment outcomes, then the labor market variables, then the welfare state variables, and finally, the focal explanatory family policy variables. In this section, I do little to justify the inclusion of these variables in the analysis or provide empirical expectations for these variables; instead, I do that in the previous theory chapter and in subsequent descriptive and analytical chapters. Finally, I describe linear mixed models, the statistical methods used to analyze the data, and the analytical strategy used to measure the impact and importance of key labor market, welfare state, and family policy variables.

3.2 Data Description and Data Collection Procedures

The data used throughout the dissertation is an aggregate level country-year dataset where each "case" in the dataset contains information for one country and one year. This type of dataset is generally called pooled time series data. Countries in the data set include Austria, Belgium, Canada, Denmark, Finland, France, (West) Germany, Ireland, Italy, the Netherlands, Norway, Sweden, Britain and the United States, with

information on each year from 1960 to 2005 for the family policy variables and to 2008 for the outcomes and other independent variables.

The data was collected in two waves: the family policy measures and labor force and population information was collected by me, in conjunction with Robin Stryker and Scott Eliason, in 2003-4; while additional information on the labor market and other aspects of the welfare state was collected by me in 2007-10. This second wave of data collection was motivated by developments in the literature and critical feedback on earlier versions of the analysis. The original goal of data collection was to represent the universe of advanced capitalist democracies. However, due to a lack of available, comparable data, Japan, Australia, and New Zealand were dropped from the analysis in order to maintain data completeness over the full period. Specifically, these countries were dropped because longitudinal information about their childcare policies and systems was impossible to locate. Switzerland was also eliminated from the analysis because family policies are administered at the cantonal, rather than national level. I also cannot analyze data for countries outside of the OECD or for countries that have joined OECD data collection efforts late relative to the time frame, since OECD data is the majority of data about the labor market in each country.

In total, I gathered information from approximately 80 different data sources, including OECD documents and datasets, ILO documents and datasets, UN documents and datasets, country monographs, comparative studies and data sets collected by other researchers. Sources of data are presented in Appendix 1 and in tables 3.1-3.3. Whenever possible, I used multiple sources for each measure, so that I could verify consistency

among sources and locate the source of any inconsistency and create the most complete

and accurate measurement possible for all variables. Though I do contend with some

issues of missing data for some of these measures, detailed in tables 3.1-3.5, these careful

data collection procedures have provided me with a complete and accurate comparative

data set.

Although it is getting easier as information becomes more accurate and widely

available, as any comparative researcher knows, the process of collecting complete,

accurate data and making it comparable across countries and times is difficult and time

consuming. This is particularly true in collecting data on family policies because data is

scarce and scattered, and family policy legislation is complex and contradictory.

Data on family policies is scarce temporally, comparatively, and for certain topics. It is

difficult to find good quality data on family policies or disaggregated social expenditure,

especially before 1980. Comparatively, as mentioned above, it is difficult to find family

policy information on countries that are outside of the OECD or joined it later in the

period. For certain topics and countries, especially childcare coverage and generosity in

Ireland and Norway, data is particularly scarce, although I was able to overcome this

sufficiently to maintain these two countries in this dataset. Data also does not exist on

other variables for certain time periods, especially before 1980. I will discuss this

missing data when I discuss particular variables.

My data collection process was also difficult and time-consuming due to policy

complexity. In each country, different policies are created and subsequently modified by

substantially different governments over time and in response to widely varying

ideologies, needs, and social forces. Thus, individual social policies develop in a

relatively piecemeal fashion, and may be created and modified in isolation from other

social policies[8]. The intention behind policies also varies according to the ideological

orientation of the country[9]. Intentions may be important because levels of benefits can

look the same, but the intention behind them can be radically different. However, it

could also be the case that intentions may have very little to do with the impact of these

policies, especially on the outcomes I am interested in.

Whichever the case, the piecemeal nature of family policy making and the variety

of ideological intentions behind them means that policies can be extremely complex

within each country[10], and the policies, and definitions of policies, can vary widely

between countries[11]. There are literally hundreds of inter-country and intra-country

distinctions like the examples listed in the footnotes that make finding, cross-checking,

coding, and entering data difficult. These differences also mean that I had to sacrifice

some nuance in the measures in order to develop data that is comparable across countries.

None of the preceding discussion of the difficulties of collecting this data is meant to

imply that these problems are insurmountable, because I did manage to collect the data,

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[8] For example, in Germany, maternity leaves were created and mandated to be 12 weeks under a right wing government to respond to international pressure, rose to 18 weeks under a left leaning government but with the intention of maintaining traditional gender norms, and retracted again to 14 weeks under a left leaning government to respond to monetary pressure. During this period of time, other policies, including other leaves, were being created and modified, but the reforms were not connected to each other.

[9] For example, the Swedish childcare system was instituted, in part, to allow women to work, while the French childcare system was instituted because of pro-natalist concerns and a emphasis on pre-primary education.

[10] For example, Great Britain has two distinct maternity leave laws. These laws are both tied to employment, but for one the woman has to make 66 or more pounds per week, while in the other they have to make less than 66 pounds, but still have worked at least 26 weeks out of the last 66. Both have similar leave lengths, but the benefits tied to the latter policy are flat rate and significantly lower.

[11] For example, there are four distinct kinds of leaves that I have found: maternity leave, parental leave, paternity leave, and childcare leave. However, not all countries have all four types of leaves, some countries combine different types of leaves, and researchers define leaves differently.

but rather to document the difficulties present in collecting cross-national, comparative data.

This data set is, I believe, one of the more comprehensive datasets on family policies being used in the family policy literature to date. (See Appendix 2 for a list of available family policy databases for more information on these claims.) There are three reasons that I make this claim. First, perhaps the biggest strength of the data is the time series aspect of it. No other dataset, to my knowledge, has compiled data on this set of variables from 1960 onwards. Several other datasets have selected pieces that run from the mid-'70s, and no other dataset has the childcare statistics from anytime earlier than probably the mid'80's, which is part of the reason I had such a hard time collecting this data. Having this long of a time series is especially important given the focus in the welfare state literature on the periods of expansions (1950-1975 or so) and retrenchment (1975-present). Second, data accuracy is, I believe, high because I have painstakingly double- and triple-checked (and sometimes more) everything against any data source I can find. The vast majority of my data is consistent with other data sources, and when it is not, it is usually because the data source I am using to check against calculated something a different way or used a source that was discarded as inaccurate. Third, the data set has a comprehensive and relatively complete set of indicators of family policy generosity. The extent to which this is true will become more evident when I describe the family policies variables later.

3.3 Variable Description

3.3.1 Variables Describing Women's Employment Outcomes

(See Table 3.1 for descriptions of all variables described in this section.) The first

women's employment outcome considered is the female labor force participation rate[12]. I

define this as the female labor force for various ages as a share of the female population

of various ages[13]. The ages I consider include the total working age population, ages 15-

64, and ages 15-24, 25-34, 35-44, and ages 45-54 separately. While available, I do not

use age-graded rates for women ages 55-64 and 65 and up because family policies are

very unlikely to have much impact for labor force participation rates for women in this

age group, and to limit the number of analyses. Although I am missing data from early in

the period for age-graded rates of female labor force participation for several countries, I

use age-graded rates because the impact of family policies, in particular, should be

concentrated on women of younger ages. The data for this variable was obtained from

the OECD Annual Labor Force Statistics Summary Tables (2009).

The next outcomes considered are all related to part-time employment among

women. First, the rate of female part-time employment is defined as a percentage of total

female employment. Next, I consider the female share of part-time employment, which

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[12] All of the employment outcomes I consider apply to women as a demographic group. An alternative strategy would be to narrow the focus to employment outcomes for mothers. I decided against this strategy because data for employment outcomes for mothers at the aggregate level is only available for many countries for the last 5-10 years, and is not available at all for the wage gap and occupational gender segregation. A parallel analysis using available data on mothers' employment outcomes is part of my future analysis plans. However, the analyses presented here are an important conservative test for these later analyses, in that if I find effects of family policies on variables that represent the entire population of women, I will almost certainly find those effects, and more, for variables representing the population of mothers.

[13] I used the female *labor force* participation rates, as opposed to female *employment* rates, because it more accurately captures women's decisions about their labor supply. The decision, however, is likely a trivial one. The two measures are highly correlated at .972.

Table 3.1 Description of Variables Measuring Women's Employment Outcomes

Variable Name	Description	Source	Missing Data	N	Mean	S.D.	Min.	Max.
Female Labor Force Participation Rate	Female Labor Force as a % of the Working Age Female Population (ages 15-65)	Statistics Summary Tables 2009	None	686	56.27	13.56	25.7	82.4
Female LFP Rate Ages 15-24	Female Labor Force Ages 15-24, as a % of Female Pop. Ages 15-24			607	53.77	11.92	24.3	77.1
Female LFP Rate Ages 25-34	Female Labor Force Ages 25-34, as a % of Female Pop. Ages 25-34	OECD Employment and		607	65.75	17.31	15.4	94.6
Female LFP Rate Ages 35-44	Female Labor Force Ages 35-44, as a % of Female Pop. Ages 35-44	Labour Force Statistics	Aus: 60-87; Bel: 60-74, Can: 60-65, Den: 60-74,	607	64.95	20.29	15.4	92.9
Female LFP Rate Ages 45-54	Female Labor Force Ages 45-54, as a % of Female Pop. Ages 45-54	Database Database 2009	UK: 60-74	607	59.10	21.81	6.5	90.7
Female Part-Time Employment Rate	Female Part-Time Employment, as a % of Total Female Employment. Country Definitions of PT work	Bastelaer, Lemaitre and Marianna 1997 & OECD	Aus, Bel, Ita: 60-72; Den, Net: 60-74; Fin, Swe: 60-75; Fra: 60-70; Frg: 60-72; Ire: 60-74, 80-82;	501	30.63	13.03	9.4	66.1
Female Share of Part-Time Employment	Percentage of Part-Time Workers that are Female. Country Definitions of PT work	Employment and Labour Force Statistics 2009	Nor: 60-71; UK: 60-82, US: 60-66	501	76.99	8.25	58.3	92.1
Female Part-Time Employment Rate-CD	Female Part-Time Employment, as a % of Total Female Employment. Common Defintion of PT work		Aus: 60-94; Bel, Den, Fra, Frg, Ire, Net, UK: 60-82; Can: 60-75; Fin: 60-88; Ita: 60-81; Nor: 60-88; Swe: 60-86; UK: 60-82; US: 60-78	345	28.72	10.20	10.5	60.9
Female Share of Part-Time Employment-CD	Percentage of Part-Time Workers that are Female. Common Definition of PT work	OECD Employment and Labour Force Statistcs 2009	Aus: 60-94; Bel, Den, Frg, Ire, Ita, Net, UK: 60-82; Fin, US: 60-97; Fra: 60-88; Nor: 60-86; Swe: 60-82	345	75.19	7.01	61.7	90.6
Female Involuntary PT Emp. Rate-PT Emp.	Female Involuntary Part-Time Employment, as a % of Female PT Emp. Country Definitions of PT work	OECD Employment and Labour Force Statistcs 2009		317	15.79	10.07	2.0	60.2
Male-Female Wage Gap	Male-female Wage Gap, as the Difference Between Average Monthly Earnings of Males and Females, Expressed as a % of Males Average Monthly Earnings.	Autor Calculations from the ILO Laborsta (2009) and OECD Earnings (2009)	Aus, US: 60-69; Can 60-79; Ita: 60-79,2000-2008	616	24.76	8.14	9.0	49.7
Index of Dissimilarity			Available Data: Aus: 71,80,90,97,00,01,07; Bel, Den, Frg:97,00,01,07; Can: 71,81,86,90,96; Fin,	84	56.90	6.23	45.0	74.6
S-S Index of Dissimilarity			Nor, Swe: 70,80,90,97,90,01,07; Fra: 75,82,90,97,00,01,07; Ire: 71,81,86,91,96,97,00,01,07; Ita: 71,	84	54.94	4.98	40.8	66.7
Association Index	See Text for Details on Calculation and Interpretation.	Author Calculations from the ILO SEGREGAT Database; European Commission 2009	81,91,97,00,01,07; Neth: 70,79,90,97,00,01,07;	48	5.64	1.81	2.8	10.7

Country Codes: Aus-Austria, Bel-Belgium, Can-Canada, Den-Denmark, Fin-Finland, Fra-France, Frg-West Germany, Ire-Ireland, Ita-Italy, Net-The Netherlands, Nor-Norway, Swe-Sweden, UK-The United Kingdome, US-The United States

is defined as the percentage of part-workers that are female. The definition of part-time work is based upon country definitions of what constitutes part-time work[14]. I use these country based definitions because data is available for a longer time period using this definition. While data on part-time employment based on a common definition (usual working hours of less than 30 hours per week) recently became available, this data is only available for about 50% of the covered country-years, while the country definition-based data on part-time employment is available for about 74% of the covered country-years. The two definitions are highly correlated, with female rate of part-time work correlated at .874 and female share of part-time work correlated at .925, so the decision may not be that important. Moreover, as can be seen in Appendix 3, the two measures yield relatively similar levels of part-time employment across countries and over time, although the definitions produce fairly divergent levels for Sweden and Norway. Data on part-time work was obtained from Bastelaer, Lemaitre and Marianna (1997) and the OECD Employment and Labour Force Statistics Database (2009).

I consider not only part-time employment, but the incidence of involuntary part-time employment among women. Involuntary part-time employment is defined by the OECD as those working part-time (based on country definitions of part-time employment) who usually work full-time but are not due to economic slack, who usually work part-time but are working fewer hours in their jobs due to economic slack, and those who cannot find full-time work, but want it (OECD 2009). Unfortunately,

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[14] The definition of part-time work varies considerably across countries, but usually involves one of three main approaches 1) a cut-off of generally 30 or 35 hours per week based on usual working hours, with persons working fewer hours than that cut-off work being considered as part-timers 2) a comparable cut-off based on actual hours worked during the reference week or, more rarely, 3) a classification based on the worker's perception of his/her employment status (OECD 2007).

information on involuntary part-time employment based on a common definition is not available. I use the rate of female involuntary part-time employment defined as a percentage of female part-time employment to measure involuntary part-time employment, although an alternative measure defined as a percentage of total female employment is also available. Data on the incidence of involuntary part-time employment was obtained from the OECD Employment and Labour Force Statistics Database (2009).

I also consider more direct measures of women's employment inequality. One such measure is the male-female wage gap. Following ILO and UNECE definitions, I define and calculate the male-female wage gap as the difference between average weekly earnings of male employees and female employees, expressed as a percentage of average weekly earnings for male employees. Average weekly earnings refer to gross weekly wages. This measure of the wage gap may conflate differences in work hours with the wage gap. In order to adjust for this tendency, I include the proportion of women in part-time employment as an independent variable in all analyses using the wage gap. A more preferable measure would examine the wage gap among full-time workers. Unfortunately, this measure is only available for two cross-sections of the dataset. Data on the male-female wage gap was obtained from the ILO Laborsta Database (2009) and the OECD Earnings Databases (2009), and double-checked with information from the UNECE Statistical Division Database (2009).

Another measure of women's employment inequality is occupational gender segregation, or the extent to which men and women hold different jobs. There are three

standard summary indices of occupational gender segregation in use in the literature: D,

D_s, and A^{15}. See Appendix 4 for details on how these measures are calculated. In all

analysis, I use the Size Standardized Index of Dissimilarity or D_s because it is easily

interpretable, available for 84 country-years (see the discussion about limited data

availability below), and is not dependent on the occupational distribution. I would have

preferred to use A because it is margin-free, better captures prevailing conceptions of

segregation, and is more comparable across countries and times; however, it is only

available for 48 of the country-years in my sample. I do use A for robustness checking

purposes in subsequent analyses.

The data used to calculate these summary indices comes from the ILO

SEGREGAT database and the recent European Commission report on gender segregation

in the EU and North America (2009) and double-checked (where possible) with Charles

and Grusky (2004). It is very important to note that the data on which these indices were

calculated are not strictly comparable across countries or points in time, given differences

regarding the sources of data collection, worker coverage, and national classifications

used. While I would have preferred harmonized time series and cross-national

occupational data, such an undertaking is simply not feasible, given the difficulties

Charles and Grusky (2004:33-34) had in creating a harmonized cross-national dataset for

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[15] Charles and Grusky (2004) criticize the use of summary indices because there use assumes a historically and cross-nationally invariant profile, while existing evidence suggests substantial cross-national and over time variability in the pattern and sex-typing of occupational gender segregation. Instead, they suggest that all index-based analysis be supplemented with explicit modeling of segregation arrays, under a modeling framework they suggest, because doing so uncovers the structure of these arrays in more revealing ways than conventional indices permit. I continue to use summary indices in order to maintain comparability with previous studies and because I am interested in the impact of family policies and other variables on occupational gender segregation across countries, over time, and not the pattern of occupational gender segregation within each country at a specific time point.

just 10 countries at one point in time, my time constraints, and that this dissertation is not centrally focused on occupational gender segregation. This approach of using variable classificatory schemes has been used in previous research (e.g., Hakim 1994, Anker 1998). I choose this approach over the alternative method of using highly aggregated occupational data schemes (e.g., Charles 1992) because there is substantial variability even across highly aggregated schemes over time, and because broader occupational gender integration can mask segregation at lower levels (Bielby and Baron 1985; Bielby and Baron 1986; Reskin 1993).

Unfortunately, I also deal with large amounts of missing data with these measures because they were only collected approximately every decade from 1970 to the mid 1990's, and then every two to three years after that. As such, I only have 84 country-years of data for D and D_s and 48 country-years for data for A[16]. It is important to note that given the restricted sample size on these models and issues of comparability in calculating occupational gender segregation, results on this dependent variable should be taken as tentative until better data on occupational gender segregation is available.

3.3.2 Variables Describing Labor Market Processes

(See Table 3.2 for descriptions of all variables described in this section.) I consider four variables as representative of various labor market processes: employment in services, women's educational attainment, the national unemployment rate, and real GDP per capita. The first, employment in services, is defined as employment in services

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[16] There is more limited information on A because the European Commission report only calculated D and D_s and did not include enough raw data to calculate A.

as a share of the population ages 15-64. The data for this variable was obtained from the OECD Annual Labour Force Statistics Summary Tables (2009). The next variable used is women's educational attainment. This is measured as the average years of schooling completed for women age 25 and over. These calculations were completed by Barro and Lee (2000) at five year intervals using data from UNESCO (1960, 1965,…, 2000). The rest of the time-series was completed by me using Barro and Lee's (2000) calculations and data from UNESCO (1961-1964, 1966-1969,…,2008). See Barro and Lee (2000) for information on these calculations.

I also use the national unemployment rate, which was calculated by me using data obtained from the OECD Annual Labour Force Statistics Summary Tables (2009). The unemployment rate is defined as the percentage of the labor force that is not employed. Although there are published unemployment rates available through OECD, they are country based definitions of unemployment. In order to maintain comparability across countries and over time and to reduce the amount of missing data, I directly calculated the unemployment rate using measures that are harmonized across countries and over time. My calculated unemployment rates are highly correlated with OECD published unemployment rates at .934.

The last variable I use to represent the labor market processes is real GDP per capita. In order to make this comparable across countries and over time, I use real GDP per capita in 2005 (Laspeyres) international dollars. This figure is obtained by adding up consumption, investment, government and exports, and subtracting imports in any given year. The given year components are obtained by extrapolating the 2005 values in

Table 3.2 Description of Variables Measuring Labor Market Processes

Variable Name	Description	Source	Missing Data	N	Mean	S.D.	Min.	Max.
Employment in Service Rate	Employment in Services, as a % of the Total Working Age Population (ages 15-65).	OECD Annual Labour Force Statistics Summary Tables 2009	None	686	39.34	9.65	20.5	61.6
Female Average Years of Education	Average Years of Education Completed by Women Ages 25 and U	Barro and Lee 2000 and Author Calculations from UNESCO Various Years	None	686	8.30	1.87	4.2	13.7
Unemployment Rate	Percentage of labor force that is not employed	Author Calculations from OECD Annual Labour Force Statistics Summary Tables 2009	None	686	6.20	4.07	-2.9	22.6
Real GDP Per Capita	Real GDP Per Capita in 2005 International Dollars (Laspeyres)	Penn World Table Version 6.3	None	686	21.89	7.90	6.6	48.6

Table 3.3 Description of Variables Measuring Welfare State Processes

Variable Name	Description	Source	Missing Data	N	Mean	S.D.	Min.	Max.
Cum. Left Cabinent Incumbency	Cumulative Percentage of Cabinet Seats Held by Left Parties from 1946 to Year of Observation	Huber Et. Al. Comparative Welfare States Database 2000; Author Calculations from EJPR for Various Years	None	686	13.44	11.78	0.0	49.9
Corporatism	Hicks-Kenworthy Composite Corporatism Measure. See Text for More Details on this Measure.	Kenworthy 2003 and Hicks and Kenworthy 1998; Author Calculations from ICTWSS 2008	None	686	5.49	3.41	0.1	9.9
Left Cabinent and Corporatism Scale	Left Cabinent and Corporatism Scale. Created from a Principal Components Factor Analysis. See Table 3.6	See Above	None	686	0.00	1.00	-1.5	2.1
Cum. Females in Parliament	Cumulative Percentage of Seats in Parliament Held by Women from 1945 to Year of Observation	Huber Et. Al. Comparative Welfare States Database 2000; IPU Statistical Arhive on Women in Parliaments	None	686	8.18	5.41	0.9	24.7
Tax Type	Individual Taxation (1) vs. Joint Taxation (0)	Dingeldey 2001; OECD Taxation Dataset 2009	None	686	50.15%	--	--	--
Public Sector Employment	Civilian Government Employment, as a % of the Total Working Age Population (ages 15-65).	OECD Economic Outlook 2009 and Military Balance 1960-1999	None	686	11.44	5.39	3.7	25.9

international dollars from the Geary aggregation using national growth rates. It is a fixed base index where the reference year is 2005 (Heston, Summers, and Aten 2009). The data for this variable was collected from the Pen World Table, Version 6.3 (Heston Summers and Aten 2009).

3.3.3 Variables Describing Welfare State Processes

(See Table 3.3 for descriptions of all variables described in this section.) I consider four variables as representative of various welfare state processes: cumulative left cabinet incumbency, cumulative females in parliament, corporatism, and type of taxation present. Cumulative left cabinet incumbency is calculated as the cumulative percentage of cabinet seats held by left parties from 1946 to the year of observation. I use this measure, as opposed to the contemporaneous percentage of seats, because research has shown that it is long-term success of left parties that matters more than the party currently in power (Huber and Stephens 2001).

Cumulative females in parliament is calculated as the cumulative percentage of seats held by women in parliament from 1945 to the year of observation, for the same reasons as described above. Data for these two variables was obtained from the Huber, Ragin, Stephens, Brady, and Beckfield Comparative Welfare States Database (2000) and directly from the source for later years. This is the annual issue of the European Journal for Political Research that contains information on the political situation in each country for left cabinet incumbency, and the statistical archive of women in parliament

maintained by the Inter-Parliamentary Union for the proportion of women in parliament[17].

Corporatism is an institutional arrangement in which important political and economic decisions are reached via a process of negotiation between centralized employer and employee groups, as well as the state. While there is very little agreement in the literature about how researchers should measure it (Kenworthy 2003), I use the Hicks-Kenworthy composite corporatism measure, which is a composite measure of the scores for seven types of economic cooperation: business centralization, wage setting coordination, cooperation between government and interest groups, tripartite neocorporatism, cooperation between investors and firms, and cooperation between labor and management. Data for this measure was obtained from Kenworthy (2003) and calculated by me from the ICTWSS database maintained by Visser for 2002-2007. (See Kenworthy (1998) for more details on this measure.)

As one would expect from the previous chapter, the political variables of left cabinet incumbency and corporatism are highly correlated at .816 and tend to go hand in hand with each other. Therefore, I create a scale of these two variables using a principal components analysis (Table 3.4). This scale is a reasonable fit to the data, explaining 80% of the variance of the variables. As can be seen in Appendix 5, this scale is highly correlated with female political representation. However, substantive interpretation of the results of left cabinet incumbency/corporatism scale and female political participation

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[17] Using cumulative measures obviously restricts the ability to capture year to year shifts in a countries political climate, but these measures are standard in the literature (see Huber and Stephens 2001).

Table 3.4: Principal Components Analysis of Left Cabinent Incumbency and Corporatism (N=686)

Factor Analysis			
Factor	Eigenvalue	Difference	Cumulative Variation Explained
Factor 1	**1.612**	**1.224**	**0.806**
Factor 2	0.388		1.000
Factor Loadings			
Variable	Factor 1	Uniqueness	
Left Cabinent Incumbency	0.898	0.194	
Corporatism	0.898	0.194	

do not change dramatically when one of two the variables is excluded from the models so all sets of variables continue to be included.

The type of taxation present in the country is a dummy variable that indicates if the country-year has individual taxation, where all tax is based on the individual, with no distinction by marriage or employment of the partner vs. joint taxation, where the basic unit of taxation is the married couple and couples who both work higher paying jobs or long hours face a larger tax burden than couples where only one person works or at least makes the majority of the money. Data for this indicator variable was obtained for Dingeldey 2001 for years before 2000 and from the OECD Taxation Database (2009) for the years following. This variable was double-checked with the Commission of European Communities (1970-1982) and the Council of Europe (1983-1999) Comparative Tables of Social Security Regimes. Ideally, I would have liked to create a variable that measures the tax penalty associated with being in a dual earner couple (as opposed to a single earner married couple) over time, but that data is only available after 1997.

The last welfare state process that I consider is public employment. Public

employment is defined as civilian government employment as a share of the population

ages 15-64. Data on the size of general government employment was obtained from the

OECD Economic Outlook Database (2009), while data on civilian government

employment was obtained by subtracting the size of the armed forces for each country-

year from the size of employment in general government. The size of the armed forces

was obtained for the years before 2000 from annual editions of the *Military Balance*

(International Institute for Strategic Studies, 1960-1999) and after 2000 by subtracting

total employment from civilian employment. Public employment sits on the border

between a "control" welfare state policy process and a family policy. As described in the

previous chapter, large public sectors tend to emphasize service delivery, which generates

high levels of female labor force participation through both supply and demand factors.

As such, public employment may serve as an important feature of the welfare state, along

with family policies, that policymakers can use to improve women's employment

outcomes.

3.3.4 Variables Describing Family Policies

(See Table 3.5 for descriptions of all variables described in this section.) The

most data collection effort, as described above, went into collecting and checking the

family policy variables. The sources of data are too many to list here, but are all

described in Appendix 1. The dataset contains detailed information on social expenditure

for paid leaves, publicly funded childcare, and family allowances and support benefits.

Table 3.5 Description of All Family Policy Variables in Dataset

Variable Name	Description	N	Mean	S.D.	Min.	Max.
Job Protected Leave	Legislated Job Protection for Maternity and Parental Leaves (1=Yes)	644	90.06%	--	--	--
Public Expenditure on Leaves	Public Expenditure for Paid Maternity/Parental Leave as a % of GDP	601	0.24	0.25	0	1.4
Maternity Leave Length	Length of Maternity Leave in Weeks	644	17.03	10.59	0	52.0
Wage Replacement Rate	Wage Replacement Rate of Maternity Leave, as a % of wages	644	65.69	34.48	0	100.0
Flat-Rate Leave Pay	One-Time/Lump-sum or Flat Rate Payment for Maternity Leave (1=Yes)	644	53.42%	--	--	--
Coverage of Maternity Leave	% of Employed Women Covered by Maternity Leave Laws	644	87.73	32.83	0	100.0
Extended Leave Length	Length of Extended/Parental Leave in Weeks	644	22.27	36.44	0	156.0
Extended Leave for Fathers	Fathers are Eligible to Take Some of All of Extended Leave (1=Yes)	644	41.30%	--	--	--
Child Care Leave Length	Length of Child Care Leave in Weeks	644	14.21	24.34	0	104.0
Child Care Leave Pay	Child Care Leaves are Paid (1=Yes)	644	16.61%	0.37	0	1.0
Guaranteed Child Care for Ages 0-2	Government Guarantees Child Care Slots for All Children Ages 0-2 (1=Yes)	494	46.96%	--	--	--
Guaranteed Child Care for Ages 3-School Age	Government Guarantees Child Care Slots for All Children Ages 3-School Age (1=Yes)	494	63.77%	--	--	--
Coverage of Child Care for Ages 0-2	Percentage of Children Ages 0-2 in Publicly Funded Child Care	577	12.58	15.88	0	67.3
Coverage of Child Care for Ages 3-School Age	Percentage of Children Ages 3-School Age in Publicly Funded Child Care	610	52.89	28.13	0	100.0
Public Expenditure on Child Care	Public Expenditure for Child Care as a % of GDP	425	0.49	0.55	0	2.1
Child Care Tax Relief	Tax Relief for Child Care Expenses (1=Yes)	644	38.51%	--	--	--
Public Expenditure on Family Allowances and Support Benefits	Public Expenditure for Family Allowances and Support Benefits for Children as a % of GDP	629	0.95	0.66	0	2.9

Data Sources: See Appendix 1

The dataset also contains information on four types of leaves[18]: maternity leaves, which are only available to mothers' immediately before and after they give birth; extended leaves, which can only be taken immediately after the expiration of the maternity leave; parental leaves, which are extended leaves available to both parents; and childcare leaves, which are long, low paid, or unpaid leaves that are typically taken by the mother after the maternity and/or parental leave has run out. I also include information about leave pay, including the wage replacement rate of the maternity leave, which is the percentage of the women's earnings replaced with payments from the government, an indicator if the maternity leave has a one-time lump sum or flat rate payment to the mother, and an indicator if childcare leave is paid or unpaid. The dataset also has information about public childcare, including an indicator variable if the government guarantees a slot in publicly funded childcare for children ages 0-2 and 3-School Age, and the percentage of children ages 0-2 and 3-School Age who are actually in publicly funded childcare.[19] Finally, the dataset contains a variable that indicates the presence of childcare tax credits, which are meant to offset the cost of private childcare[20].

I will investigate the effects of many of these variables on women's employment outcomes individually, focusing in particular on the effects of maternity, parental, and childcare leaves, the length of the leave, the wage replacement rate or leave pay,

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[18] This formulation is broadly consistent with how other scholars have defined these leaves (Gauthier 1996; Gornick, Meyers, and Ross 1998). However, some scholars think of extended and childcare leaves as the same thing, while others combine extended and parental leaves.

[19] I use this age distinction because existing data and research tends to use this age distinction.

[20] The dataset also contains information on various school policies that may influence women's employment outcomes, including the age of compulsory schooling, the number of school hours per week, the number of school days per year, and an indicator of a continuous school day or not. However, I do not consider these variables in my dissertation because they are not strictly "family policies", although I plan to consider them in future research.

coverage and guarantees of childcare for children of various ages, whether a childcare tax credit is available, and expenditure on various family policies. However, in some analyses, family policies are measured using indices, either an overall generosity index with two components, or four separate indices for parental leave, childcare ages 0-2, child ages 3-school age, and family allowances, support benefits, and tax credits (Table 3.6). I use these indexes to capture the way these policies work together as a package.

The parental leave index is an additive scale of the length of maternity leave as a percentage of a calendar year, the length of parental leave as a percentage of a calendar year, the wage replacement rate, the percentage of women covered under the maternity leave law, and the public expenditure on parental leave as percentage of GDP[21]. All variables are scaled to be in the range [0,1] so no variable outweighs the others. The alpha reliability coefficient for this scale is .721, and I utilized pairwise deletion in calculating the index in order to maximize the number of cases used.

The childcare index for children ages 0 to 2 is an additive scale of the percentage of children ages 0 to 2 in publicly funded childcare, the existence of legislation guaranteeing access to public childcare for all children ages 0 to 2, and the public expenditure on childcare as a percentage of GDP. Similarly, the childcare index for children ages 3 to school age is an additive scale of the percentage of children ages 3 to school age in publicly funded childcare, the existence of legislation guaranteeing access to public childcare for all children ages 3 to school age, and the public expenditure on childcare as a percentage of GDP. All variables are scaled to be in the range [0,1] so no

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[21] I also have created an index with maternity leave alone (i.e. not including parental leave). However, I use the parental leave index because the two indices give similar results and the two measures are highly correlated at .938.

Table 3.6 Description of Family Policy Indexes

Variable Name	Description	Missing Data	Alpha	N	Mean	S.D.	Min.	Max.
Materntiy Leave Index	Additive Scale of Maternity Leave Length, Wage Replacement Rate, Coverage, and Public Exp. on Paid Maternity Leave. All variables are scaled to be in the range [0,1].	None	0.775	644	0.53	0.22	0.0	1.0
Parental Leave Index	Additive Scale of Maternity Leave Length, Wage Replacement Rate, Parental Leave Length (Extended Leave if Fathers is Eligible) Coverage, and Public Exp. on Paid Maternity Leave. All variables are scaled to be in the range [0,1].	None	0.721	644	0.47	0.21	0.0	0.9
Childcare Ages 0-2 Index	Additive Scale of Guaranteed and Coverage of Child Care for Children Ages 0-2 and Public Expenditure on Child Care. All variables are scaled to be in the range [0,1].	Ire: 60-79; Nor: 64-79, 81-84, 86-87.	0.749	602	0.32	0.33	0.0	1.2
Childcare Ages 3-School Age Index	Additive Scale of Guaranteed and Coverage of Child Care for Children Ages 3-School Age and Public Expenditure on Child Care. All variables are scaled to be in the range [0,1].	Nor: 64-79, 81-84, 86-87.	0.767	622	0.53	0.35	0.0	1.3
Family Allowances, Support Benefits, and Tax Credits Index	Additive Scale of Child Care Tax Relief and Public Expenditure on Family Allowances and Support Benefits. All variables are scaled to be in the range [0,1].	Aus: 86-89;Can: 60, Fra: 60-62; Nor 86-87.	0.106	629	0.36	0.26	0.0	0.9
Family Policy Generosity Index - Leaves and Childcare	Family Policy Generosity Index Measures. Created from a Principal Components Factor Analysis of the Parental Leave Index, the Childcare Indexes, and the Family Allowances Index. See Table 3.7	Aus: 86-89; Can: 60, Fra: 60-62; Ire: 60-79; Nor: 64-79, 81-84, 86-87.	--	589	0.00	1.00	-1.8	2.4
Family Policy Generosity Index - Family Allowances and Tax Credits			--	589	0.00	1.00	-1.5	2.0

Country Codes: Aus-Austria, Bel-Belgium, Can-Canada, Den-Denmark, Fin-Finland, Fra-France, Frg-West Germany, Ire-Ireland, Ita-Italy, Net-The Netherlands, Nor-Norway, Swe-Sweden, UK-The United Kingdom, US-The United States

Data Sources: See Appendix 1

Table 3.7: Principal Components Analysis of the Four Family Policy Measures (N=589)

Factor Analysis			
Factor	Eigenvalue	Difference	Cumulative Variation Explained
Factor 1	2.410	1.378	0.603
Factor 2	**1.032**	**0.615**	**0.861**
Factor 3	0.417	0.277	0.965
Factor 4	0.140		1.000

Factor Loadings			
Variable	Factor 1	Factor 2	Uniqueness
Parental Leave Index	0.834	0.140	0.285
Childcare Ages 0-2 Index	0.907	-0.186	0.143
Childcare Ages 3-School Age Index	0.943	-0.005	0.111
Family Allowances, Support Benefits, and Tax Credits Index	0.057	0.989	0.018

variable outweighs the others. The alpha reliability coefficient is .749 for the 0 to 2 index and .767 for the 3 to school age index, and I utilized pairwise deletion in calculating the index in order to maximize the number of cases used.

The family allowances, support benefits, and tax credits index is an additive scale of the public expenditure on family allowances and support benefits and whether the country has a childcare tax credit available. The items of this scale are not highly correlated and have a low alpha reliability coefficient. However, they are part of the family policy "package" in many countries and have been scaled together in previous research, so I choose to do so here as well (Gornick, Meyers, and Ross 1998; Stier, Lewin-Epstein, and Braun 2001).

In some analyses, I use an overall family policy generosity index that combines these four indices into two indexes. I do this using a principal components analysis of the

four family policy indices that is described in Table 3.7. This analysis reveals that two factors are the best fit to the data, with the parental leave and childcare indexes forming one factor and the family allowances and tax credits index forming the second factor. This two-factor solution is a reasonable fit to the data, explaining 86% of the variance in the variables.

3.4 Methods and Analytical Strategy

As mentioned above, in all analysis I use pooled cross-section time-series data. I use this type of data because it increases the number of observations and the degrees of freedom, makes it possible to control for exogenous shocks common to all countries, reduces potential omitted variable bias, and allows for the analysis of country and time effects at the same time. However, there are a number of drawbacks to using this type of data, all related to the fact that observations are not independent. In particular, errors tend to be serially correlated, heteroskedastic, correlated across countries at a single point in time due to common exogenous shocks, and non-spherical (serially correlated and heteroskedastic at the same time).

Researchers have used a number of ways of dealing with these drawbacks, mostly related to correcting the error structure in ordinary least squares (OLS) regression. First, the "standard" way has been to use panel corrected standard errors as proposed by Beck and Katz (1995) to account for heteroskedasticity, an autoregressive one (AR1) error correction or a lagged dependent variable to account for autocorrelation, and fixed-effects models to account for the possibility of non-spherical errors and exogeneous shocks. Second, in some sociological literature, a clustered robust estimator has been used to

adjust the standard errors for nonindependence of observations across countries and, therefore, account for autocorrelation in all kinds of fixed effects regressions (Hicks and Kenworthy 2008; Moller at el. 2003). Third, Kittel and Winner (2005) propose a model in first differences for both dependent and independent variables, in other words, a change model, in order to deal with autocorrelation.

However, all of these solutions to the problem of non-independence of errors bring with them additional problems, resulting in biased or inconsistent estimates, or are otherwise inappropriate in the case of this dissertation. Specifically, fixed effects regressions are criticized for absorbing cross-sectional variance in the level of independent variables across units, especially for partly or completely time invariant variables (Huber and Stephens 2001; Beck 2001). The use of the autoregressive one (AR1) error correction may be appropriate if the error structure follows such a process. Unfortunately, because the covariance matrix of the errors is not known, it is impossible to know in ordinary least squares regressions if the error structure follows that process or not (Kittel and Winner 2005). The use of a lagged dependent variable to account for serial correlation is likely to bias estimates upward, inappropriately captures large parts of the trend in the dependent variable, and conceptually turns the analysis into one of annual change, as opposed to levels (Huber and Stephens 2001, Plumper, Troeger, and Manow 2005)[22]. The use of the clustered robust estimator to adjust standard errors assumes a large number of countries (generally, more than 50) and requires errors to be

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[22] The correlations between the dependent variable and lagged dependent variable tend to be extremely high. However, Huber and Stephens (2001) argue that this high correlation is the result of both variables sharing the same underlying causes that are better described by the use of explanatory independent variables. Thus, large portions of the correlation between a dependent variable and a lagged dependent variable are spurious.

non-heteroskedastic between countries; neither assumption holds in my data or most data of this type. Finally, using models in first differences changes the interpretation of the estimation results, focusing only on short-term changes of the dependent and independent variables, as opposed to the level of these variables. This is inappropriate in my case because the theory, like many welfare state theories, suggests that the level, or relative generosity of family policies, is associated with women's employment outcomes[23].

To avoid the problems associated with trying to correct OLS regressions for use with cross-sectional time-series data, the majority of the statistical analysis is done using linear mixed models. These models are also sometimes called mixed models, mixed-effects models, or random-effects models. Linear mixed models are superior to OLS regression techniques for this analysis for a number of different reasons. First, properly specified, linear mixed models do not assume that error terms are independent and, in fact, were explicitly designed for use in such a situation. Second, linear mixed models have great flexibility in dealing with cross-country heterogeneity, through the use of random intercepts and random coefficients. The use of random intercepts and coefficients yields more efficient estimates than fixed effect regressions and associated interaction terms by assuming that the coefficients come from a random sample with a roughly normal distribution and a mean of 0 (Verbeke and Molenbergs 2000). Third, linear mixed models do not make strong assumptions about serial correlation in the error structure. Rather, they allow for the specification of different kinds of serial correlation

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[23] Moreover, an analysis of short-term change greatly exaggerates any measurement error, ignores the cumulative effect of variables or policies (also called the maturation effect), and is not generally comparable with previous analyses (Huber and Stephens 2001). This is not to say that change models are always inappropriate in welfare state analysis. In fact, part of my future plans for analyzing this data includes the use of change models.

and, through the use of information criteria, allow the specification of the proper serial correlation structure.

In general, a linear mixed model can be expressed in the following matrix form (Laird and Ware 1982, Verbeke and Molenbergs 2000):

$$\begin{cases} Y_i = X_i\beta + Z_i b_i + \varepsilon_i \\ b_i \sim N(0, D), \\ \varepsilon_i \sim N(0, \Sigma_i), \\ b_1, \ldots, b_n, \varepsilon_1, \ldots, \varepsilon_N \text{ independent} \end{cases} \tag{4}$$

where Y_i is the n_i-dimensional response vector for subject $i, 1 \leq i \leq N$. X_i and Z_i are $(n_i \times p)$ and $(n_i \times q)$ dimensional matrices of known covariates. β is a p-dimensional vector containing the fixed effects, where the regression parameters are the same for all country-years. b_i is the q-dimensional vector containing the random effects, where the regression parameters are country-year specific. ε_i is an n_i-dimensional vector of the error or residual components. D is a $(q \times q)$ dimensional covariance matrix for the random effects. In longitudinal data analysis, the random effects covariance matrix is often assumed to have no specific form, although many structures are available (Verbeke and Molenbergs 2000:98).

Σ_i is a $(n_i \times n_i)$ dimensional covariance matrix for the error or residual components. The covariance structure for the residual components is specified by the researcher and can range from the simple (AR1) error correction to a more complicated decomposition of the residual components. In this decomposition, the error component, ε_i, is assumed to have a constant variance and is decomposed as $\varepsilon_i = \varepsilon_{(1)i} + \varepsilon_{(2)i}$ in which

$\varepsilon_{(1)i}$ is a component of measurement error and $\varepsilon_{(2)i}$ is a component of serial correlation (Diggle, Liang, and Zeger 1994; (Verbeke and Molenbergs 2000). Common correlation functions used to estimate the $\varepsilon_{(2)i}$ serial correlation component include the exponential and the Gaussian functions. Finally, it should be noted that the term independent in the last line of the equation means that the random effect and residual components are independent from each other.

In this analysis, I build a series of linear mixed models using the women's employment outcomes described above as the dependent variables, the labor market and welfare state processes described above as "control" variables, and the family policy variables and indexes described above as the independent variables of interest. There are three issues related to the proper specification of the independent variables that I describe my solution too before detailing the model building process. These are issues related to the proper specification of the lag structure, multicollinearity, and the presence of relevant interaction terms.

I make use of the time-series nature of the dataset to lag the independent variables in various ways[24]. Specifically, I lag all of the labor market variables and welfare state variables by one year, and I used various lags on the family policy variables, depending on the outcome. Beginning with the labor market and welfare state variables, it is necessary to lag the employment in services and public sector employment variables

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[24] Although I did not include any lag structure in earlier versions of this dissertation and papers based on it, this fact sparked significant feedback from many readers. This led me to revisit the issue, and I have become convinced that it is methodologically necessary to lag, at minimum, the employment variables by one year, and explore the best fitting lag structure for the family policy variables. In fact, the desire to be able to lag variables and explore various lags while maintaining N led, in part, to the most recent round of data collection.

because these variables have components of the employment-based outcomes in them, specifically female labor force participation rates and various measures of part-time employment. (See Appendix 5 for a description of how this fact produces an endogeneity trap that biases estimates of the employment in services and public sector employment effects.) The best approach to escaping this endogeneity trap in my data and models is to use a one-year lagged version of employment in services and public sector employment. Moreover, in order to account for the portion of the lagged effect due to the relationship of the lagged independent and dependent variables that is resident in the serial correlation structure, it is necessary to include a one-year lagged version of female share of the labor force.

It is less obviously necessary to include lagged versions of the balance of the labor force and welfare state variables; however, I decided to include one-year lagged versions of all these variables for a number of different reasons. The variables measuring unemployment rate and, to a lesser extent, real GDP per capita contain indirect and weak versions of the endogeneity trap described above, so it is most sensible to include them as one-year lags. As described in the next chapter, the balance of the independent variables (women's educational attainment, left cabinet incumbency, corporatism, women in parliament, and tax tape) are included because they are hypothesized to directly or indirectly cause changes in women's employment outcomes. While not certain, it is easier to distinguish causal effects, and the direction of those causal effects, from associations by exploiting lagged structures to ensure that the hypothesized cause is antecedent to the effect. Therefore, I decided to include one-year lagged versions of all of these variables in the analysis.

The proper lag structure for the family policy variables is not obvious from the extant literature or in thinking about the policy structure. There is little agreement in the literature regarding the most appropriate lag structure for various types of family policies, although there is some consensus that there should be a lagged effect of these policies. For example, Petit and Hooks (2005) and well as Mandel and Semyonov (2005) use one-year lagged versions of their family policy variables. However, Budig, Misra, and Boeckmann, in a series of recent working papers (Misra, Budig, and Boeckmann 2010; Budig, Misra, and Boeckmann 2010), use a two-year lag, but argue that the true lag is probably longer. Moreover, it makes little sense to assume that the lag structure is the same for all types of family policies or for all outcomes. On one hand, because childcare allows women to stay in the labor force while ensuring care for children, a contemporaneous effect of childcare on employment rates, hours, and wages seems the most obvious. On the other hand, leaves allow women to temporarily exit the labor force to care for infants while maintaining a reasonably high level of wages in many countries, so a lagged effect of leaves on employment rates and hours is more likely, while either a lagged or contemporaneous effect could be present for wages. Finally, to my knowledge, there has never been an investigation of the proper lag structure for family policies on women's employment outcomes using comparative time-series data.

In Appendix 6, I explore various lag structures out to a five year lag for each of my employment outcomes using the family policy indexes described earlier. As in the model building process described below, I use information criteria to determine the best fitting model to the data, with smaller information criteria scores indicating a better

fitting model to the data[25].   I find that the best-fitting lags vary by outcome, rather than

family policy. I include a one year lag for the part-time employment outcomes, a two-

year lag for gender segregation, and a five-year lag for female labor force participation

across all ages and the male-female wage gap.

Because multicollinearity within variables over time and between independent

variables is likely in pooled cross-sectional time series analysis using level data, as

opposed to change data, and because linear mixed models have been shown to produce

biased estimates of the variance components and standard deviations at high levels of

multicollinearity (Huber and Stephens 2001, Shieh and Fouladi 2003), I detail the

multiple strategies used for dealing with multicollinearity here.

Several variables are highly correlated in my data set (see Appendix 7 for a

correlation matrix of the labor market, welfare state, and family policy indexes used), so

care is needed in dealing with these issues. In particular, employment in services is

tightly correlated with women's educational attainment, however, the direction and

significance of the main effect of each variables does not change substantially when one

or the other is excluded from the models (except in some cases where employment in

services mediates that educational attainment effect, which makes theoretical sense).

Therefore, both continue to be included in all models because both variables have been

shown in previous research to influence women's employment outcomes. Additionally,

time and real GDP (which goes up consistently over time) are highly correlated with

many measures, so I estimated models with and without time in order to assess potential

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[25] I use the Akaike Information Criteria (AIC) and the Bayesian Information Criteria (BIC). The AIC and BIC are the most commonly used information criteria (Verbeke and Molenbergs 2000). The various information criteria yield similar results across models, indicating robust results.

bias caused by multicollinearity. This analysis again reveals that the main effect of each variable rarely changes substantially when one or the other is excluded from the models and the main effects generally "make sense" given how each should operate. Therefore, I leave both real GDP and time in all models. The results of the exploratory analysis for employment in services and women's educational attainment are shown in Appendix 10 and for real GDP and time are shown in Appendix 11.

As can be seen more clearly in Appendix 8, because the family policy indexes are highly correlated and inclusion in the same model produces results very different from entering them in separate models, I enter them in separate models. Moreover, many of family policy variables that make up the indices are highly correlated (Appendix 9). Therefore, in the analyses in which I disaggregate these variables, I enter many of them in separate models. In particular, because the length of maternity and childcare leaves is highly correlated, I enter them in separate models as well. While parental leave length is not highly correlated with either maternity or childcare leave length, I also enter this in a separate model for consistency. An alternative strategy would be to create a scale by adding the length of leaves together. This strategy might make sense if there was good evidence that women take all the leave that is available to them, indicating that the total leave length is important, whereas the lengths of individual leaves is not. However, the very limited evidence that we do have suggests that take-up rates for maternity leaves are extremely high, somewhat lower for most parental leaves, and even lower for childcare leaves (Moss and Devon 1999). In addition, the leaves have been available for different lengths of time, with maternity leaves available the longest and parental and childcare leaves being newer developments, and the characteristics of the leaves are different

across types of leave. In another set of models, I enter childcare guarantees and childcare coverage in separate models because these variables are highly correlated. Finally, I enter public expenditure on leaves, childcare, and family allowances in separate models because these variables tend to be highly correlated.

I consider two interaction terms in these models. As described previously, employment in services and public sector employment are highly correlated and mean different things in different sets of countries[26]. In many models, I included an interaction term between the liberal regime type and employment in services and an interaction term between the social democratic regime type and public sector employment. Many of these interaction terms tend to drop out of significance in the late stages of model building, often because random intercepts that account for country differences in the slope of the variables are included in the model.

The process of model building in linear mixed models is complicated by the fact that both the mean structure and the covariance structure need to be specified, but these structures are not independent of each other (Verbeke and Molenbergs 2000). Thus, I follow the process of model building recommended by Verbeke and Molenbergs (2000). In each step and across steps, the best fitting model is determined by the use of information criteria and (in the case of nested models) chi-square tests, with smaller information criteria scores indicating a better fitting model to the data.

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[26] The preferred solution would be to include employment in services in the private sector, as opposed to employment in services across all sectors. However, a close investigation of the OECD version of this variable reveals substantial measurement error across countries and over time. This measurement error is so large that in many countries the size of the private service sector is reported to be larger than the whole service sector or smaller than the size of the entire public employment sector subtracted from the service sector. Therefore, I decided against using this measure in any analyses.

The first step in this process is to select a preliminary mean structure, or fixed portion of the model. This is the first step because the covariance structure models all variability in the data not explained by the fixed effects. This process begins by modeling the functional relation over time and then including relevant regressors and interactions (Verbeke and Molenbergs 2000). By modeling the functional relation over time, I am simply modeling whether there is a time trend for that dependent variable and what "shape" that time trend approximates. (The functional relation over time for women's employment outcomes is described in Appendix 12, and for age-graded rates of women's labor force participation rates in Appendix 13.) This step also included the investigation of various interaction terms, lag structures, and strategies for dealing with multicollinearity described above. Because there are very few cases in the models estimating occupational gender segregation, I also ran models separately estimating each variable on the occupational gender segregation index in this step, in order to ensure that the findings from the multivariate models are robust.

The second step is to select a preliminary random effects structure. The covariates included in the random effects structure must also have already been included as covariates in the fixed portion and, as in OLS, any interaction term must include all lower interaction terms in addition to random intercepts (Verbeke and Molenbergs 2000). As noted above, the covariance matrix of the random effects portion is often assumed to have no specific form in longitudinal data analysis (Diggle, Liang, and Zeger 1994). However, because I want to at least estimate random effects for all variables in the model, such an assumption is unrealistic, given that assuming an unstructured covariance matrix necessitates estimating $p(p+1)/2$ parameters, where p is the number of random

effects. In other words, in a model with 10 random effects and an unstructured covariance structure, in which all of the random effects are allowed to covary with each other, 55 variances and covariances would be estimated on, at most, 686 points of data. Such a model will not converge, or will not properly estimate standard errors for the random effects in either Stata 11 or SAS 9.2. Therefore, I estimate a variance components matrix (also called independence model) in which a distinct variance for each random effect is estimated and covariances of the random effects are assumed to be zero[27]. In other words, this covariance structure assumes no within-country correlation of error terms[28]. In this step, I also consider a simpler covariance matrix in which all random effects are assumed to have a common variance and covariance (often called an exchangeable structure) and well as reduced complexity models.

The third step is to select a residual covariance structure, or the covariance matrix for the error component. This is usually done by fitting and comparing a series of serial correlation models using information criteria, because we are typically only interested in accounting for the type of serial correlation the exists in the data, rather than being interested in the serial correlation function *per se* (Verbeke and Molenbergs 2000). In my case, I try two simple serial correlation structures, the first order autoregressive (AR1) structure and the first order autoregressive moving average (ARMA) structure, and

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[27] There are other covariance structures I could consider but I choose these because they are the most commonly used in the literature and are available in both statistical packages I use to analyze the data (SAS and Stata).

[28] This is likely not a realistic assumption if I were to stop the analysis here; however, in the next step I specify the way in which errors are correlated using an error covariance structure, thus, the error variance becomes one of the variance components in the next step, although this assumption often entails assuming a common within-country error structure across countries.

two more complicated structures, the exponential and Gaussian functions, which decompose the error into a serial correlation and a measurement error portion. The fourth step involves going back and making sure that the preliminary random effects structure is needed in the model as originally specified (Verbeke and Molenbergs 2000). This often resulted in a re-specification of the random effects structure into a reduced form. When the interaction terms become non-significant, I drop them in this step in order to facilitate interpretation of the main effects of the variables, even when it results in a reduction in model fit.

I provide an example of this model building strategy for women's labor force participation rates in Chapter 4. For subsequent analyses, I provide a summary model fit table of this model fitting process, and only present the final, simplified model in the tables. In chapter 6, where I investigate the impact of family policies on women's employment inequality, I frequently include graphical representations of the impact of family policies on the outcomes. I created these graphs by holding all variables at their mean values – except the focal variable, which I varied across the values of the variable – and then graphed the resulting estimates.

3.5 Conclusion

In this chapter, I described the data used throughout the following chapters, focusing in particular on the variables used in the descriptive and explanatory analysis, and the statistical methods used in the subsequent chapters. In particular, I described the dataset I created, along with the detailed process of secondary data collection that was used to collect and create the variables used throughout this dissertation. In the next

chapter, I will describe in detail the variables used in this dissertation. I will describe the

statistical methods used to analyze the data, namely, linear mixed models, which I use to

measure the relative impact and importance of key labor market, welfare state, and family

policy variables in the following chapters.

Chapter 4. The Welfare State, Labor Markets, and Women's Employment Inequality in Comparative Perspective: a Description and Empirical Analyses

4.1 Introduction

In the second chapter, I reviewed how two distinct literatures explain women's employment inequality. First, I reviewed the literature on the welfare state, which argues that women's employment inequalities are the result of state social policies, institutions, and practices. Next, I reviewed the literature that argues that individual and structural factors such as women's labor supply decisions, women's status attainment processes, changes in the economy, the labor market, and sex segregation are the most important for explaining women's employment outcomes. Few contend that these literatures are divergent and disparate literatures; rather, most researchers believe that they are two complementary systems of explanations for women's employment inequality that should and can be usefully and productively integrated (Daly 2000; Van der Lippe and Van Dijk 2002). However, very few scholars have attempted any sort of systematic integration.

In this chapter, I take the first steps toward integrating these literatures by focusing the attention squarely on women's employment inequality and how they are influenced by both sets of explanatory factors. I begin this chapter by reviewing trends in women's employment inequality across the countries in my sample and over time. I next briefly review the literature that argues that women's labor force participation positively affects families and the state. I then describe how various welfare state and labor market processes are associated with these outcomes in the comparative perspective.

In the analytical portion of this chapter, I use linear mixed models to assess the role of labor markets and welfare states, both separately and in the same model, on various measures of women's employment inequality. I use the variables and methods described in the previous chapter to perform this analysis. The purpose of this analysis is two-fold. First, I use these models to investigate the relative role of both structural labor market factors and the broader welfare state conditions that provide the theoretical explanations for much cross-national analysis in explaining women's employment outcomes. Second, these models set the stage for the analysis in Chapter 6 which investigates the role of family policies, which are targeted welfare state policies that may be especially relevant to women's employment outcomes.

In the next chapter, I review an emerging, and important, area of research that integrates these two literatures by focusing on family policies, a subset of state social policies. These policies are state policies that, theoretically, make it easier for women and families to balance work and family demands by mediating the relationship between the market and family and allowing men and women to engage in, or opt out of, care-taking responsibilities without losing their labor market position and rewards. Thus, these policies sit at the intersection of welfare state interventions and market and individual forces. It is important to recognize that the discussion in this chapter may feel somewhat incomplete because I do not incorporate a discussion of family policies and their effects, which are obviously related to women's employment outcomes, into this chapter. Rather, I reserve the discussion of these policies for the next chapter.

Table 4.1: Labor Force Participation in 14 Welfare States from 1960-2008

Country	Female Labor Force Participation as a Percentage of the Female Population Ages 15-64				Female Share of the Labor Force				Male Labor Force Participation as a Percentage of the Male Population Ages 15-64			
	1960	1984	2008	Change Over Period	1960	1984	2008	Change Over Period	1960	1984	2008	Change Over Period
Norway	36.3%	66.3%	78.9%	42.5%	29.0%	42.6%	47.1%	18.1%	92.2%	86.8%	84.0%	-8.1%
Sweden	50.0%	78.5%	78.1%	28.1%	33.4%	46.9%	47.4%	14.0%	98.5%	85.4%	83.7%	-14.8%
Denmark	43.5%	73.8%	76.8%	33.3%	30.9%	45.6%	47.0%	16.1%	99.5%	86.7%	83.4%	-16.1%
Canada	32.0%	66.5%	74.6%	42.6%	25.5%	41.8%	46.9%	21.4%	91.9%	84.9%	82.9%	-8.97%
Finland	65.9%	72.9%	74.5%	8.6%	43.9%	47.1%	47.8%	3.9%	91.1%	82.0%	77.8%	-13.3%
The Netherlands	26.2%	40.7%	73.5%	47.3%	22.0%	34.2%	45.5%	23.5%	97.7%	76.5%	86.0%	-11.7%
United States	42.6%	62.7%	70.4%	27.9%	32.6%	43.3%	45.9%	13.3%	91.7%	84.8%	80.8%	-10.99%
Germany	49.2%	51.7%	70.3%	21.1%	37.3%	38.6%	45.4%	8.0%	94.4%	82.8%	82.3%	-12.2%
United Kingdom	46.1%	59.1%	70.0%	23.8%	32.7%	40.2%	45.7%	13.0%	99.1%	87.9%	82.3%	-16.78%
Austria	47.1%	51.5%	69.3%	22.1%	35.4%	39.7%	45.8%	10.4%	84.9%	81.7%	81.3%	-3.6%
France	46.6%	54.8%	65.3%	18.7%	33.2%	41.4%	47.0%	13.8%	94.6%	77.5%	73.2%	-21.4%
Ireland	34.8%	36.9%	63.7%	29.0%	25.5%	29.5%	43.1%	17.6%	99.1%	86.6%	82.6%	-16.55%
Belgium	36.4%	48.9%	61.3%	24.9%	30.8%	39.1%	44.6%	13.9%	88.5%	75.6%	73.9%	-14.6%
Italy	39.6%	40.7%	52.1%	12.4%	30.7%	34.6%	40.7%	10.0%	95.3%	79.5%	74.8%	-20.5%
Mean	42.6%	57.5%	69.9%	27.3%	31.6%	40.3%	45.7%	14.1%	94.2%	82.8%	80.6%	-13.5%

Data Source: OECD Labour Force Statistics Annual Tables 2009

114

4.2 Women's Employment Inequality in Comparative Perspective

Women's Labor Force Participation: Table 4.1 presents selected labor force statistics, including female labor force participation and female share of the labor force from 1960-2008, and male labor force participation. Tables 4.2 and 4.3 present age-graded labor force participation rates for women (4.2) and men (4.3). Female labor force participation, as well as the female share of the labor force, has risen dramatically over this period with most countries reaching 70% female labor force participation and 45% female share of the labor force by 2008.

Female labor force participation rates have increased across all age groups of women. The increase is most striking for women ages 25-44, the age group in which marriage and childbearing is concentrated, two statuses that have historically been associated with declining levels of women's labor supply (Heckman and Macurdy 1980; Hyslop 1999; Orloff 2002). However, recent research has demonstrated that this linkage is breaking down, with declining fertility and marriage rates and higher labor force participation rates even among married women and women with young children (Blau, Ferber, and Winkler 1998; Esping-Andersen et. al. 2002; Orloff 2002). The exception to this trend is women ages 15-24. Female labor force participation for this age group has declined slightly due to increasing educational attainment, expanding educational systems, and longer educational careers for women (Blossfeld and Shavit 1993).

On the other hand, male labor force participation has declined significantly over the period across all age groups, due to declining job prospects and pay for men across most welfare states. This decline is concentrated among the male population ages 15-24,

Table 4.2: Female Labor Force Participation for Various Age Groups in 14 Welfare States from 1970-2008

Country	Ages 15-24			Ages 25-34			Ages 35-44			Ages 45-54			Ages 55-64		
	1970	2008	Change from 1970-2008[a]	1970	2008	Change from 1970-2008[a]	1970	2008	Change from 1970-2008[a]	1970	2008	Change from 1970-2008[a]	1970	2008	Change from 1970-2008[a]
Austria	N.A.	56.9%	-9.9%	N.A.	80.1%	5.7%	N.A.	84.4%	13.9%	N.A.	79.7%	24.1%	N.A.	31.6%	12.1%
Belgium	N.A.	28.3%	-20.5%	N.A.	84.7%	18.0%	N.A.	80.2%	36.7%	N.A.	71.9%	52.6%	N.A.	25.5%	17.4%
Canada	63.7%	67.0%	3.3%	53.8%	81.3%	27.5%	51.2%	82.9%	31.7%	41.1%	81.7%	40.6%	29.0%	54.6%	25.6%
Denmark	N.A.	73.5%	3.3%	N.A.	85.4%	-9.2%	N.A.	88.7%	0.5%	N.A.	84.7%	9.5%	N.A.	52.8%	11.6%
Finland	55.0%	53.7%	-1.3%	71.3%	79.9%	8.6%	73.3%	87.6%	14.3%	68.2%	89.4%	21.2%	45.1%	59.0%	13.9%
France	47.2%	34.1%	-13.1%	52.2%	81.9%	29.7%	48.0%	84.9%	36.9%	50.2%	82.7%	32.5%	40.0%	37.7%	-2.3%
Germany	64.8%	49.5%	-15.3%	47.5%	76.3%	28.8%	47.5%	82.1%	34.6%	46.6%	82.0%	35.4%	28.4%	50.6%	22.2%
Ireland	54.9%	48.9%	-6.0%	22.2%	77.6%	55.4%	20.5%	69.0%	48.5%	23.4%	67.0%	43.6%	23.1%	42.5%	19.4%
Italy	35.5%	25.7%	-9.8%	30.7%	66.8%	36.1%	29.9%	67.8%	37.9%	21.5%	60.7%	39.2%	10.5%	24.7%	14.2%
The Netherlands	44.2%	72.7%	28.5%	32.1%	85.3%	53.2%	14.4%	82.8%	68.4%	9.5%	77.2%	67.7%	12.0%	42.5%	30.5%
Norway	48.4%	62.5%	14.1%	48.7%	85.6%	36.9%	59.2%	86.7%	27.5%	57.4%	84.3%	26.9%	42.4%	64.9%	22.5%
Sweden	59.4%	57.1%	-2.3%	60.6%	85.3%	24.7%	67.3%	89.6%	22.3%	64.9%	87.5%	22.6%	44.5%	69.3%	24.8%
United Kingdom	N.A.	62.6%	-14.5%	N.A.	76.6%	20.4%	N.A.	78.2%	9.3%	N.A.	80.1%	15.3%	N.A.	50.0%	18.4%
United States	51.2%	56.5%	5.3%	45.0%	75.2%	30.2%	51.0%	76.1%	25.1%	54.4%	76.1%	21.7%	43.0%	59.1%	27.5%
Mean	52.4%	53.5%	-2.7%	46.4%	80.2%	26.2%	46.2%	81.5%	29.1%	43.7%	78.9%	32.3%	31.8%	47.5%	18.4%

a: For countries with missing data in 1970, change is calculated using oldest available data

Data Source: OECD Employment and Labour Force Statistics Database 2009

Table 4.3: Male Labor Force Participation for Various Age Groups in 14 Welfare States from 1970-1998

Country	Ages 15-24 1970	Ages 15-24 2008	Ages 15-24 Change from 1970-2008[a]	Ages 25-34 1970	Ages 25-34 2008	Ages 25-34 Change from 1970-2008[a]	Ages 35-44 1970	Ages 35-44 2008	Ages 35-44 Change from 1970-2008[a]	Ages 45-54 1970	Ages 45-54 2008	Ages 45-54 Change from 1970-2008[a]	Ages 55-64 1970	Ages 55-64 2008	Ages 55-64 Change from 1970-2008[a]
Austria	N.A.	64.6%	-5.6%	N.A.	93.0%	2.4%	N.A.	95.4%	0.3%	N.A.	90.4%	0.3%	N.A.	52.8%	12.3%
Belgium	N.A.	34.4%	-14.7%	N.A.	94.0%	-3.1%	N.A.	94.0%	-3.7%	N.A.	88.7%	-0.1%	N.A.	42.8%	-8.0%
Canada	75.4%	67.8%	-7.6%	96.7%	91.7%	-5.0%	97.3%	93.1%	-4.2%	93.7%	89.8%	-3.9%	81.8%	67.2%	-14.6%
Denmark	N.A.	74.2%	-2.1%	N.A.	93.8%	-1.4%	N.A.	94.6%	-2.1%	N.A.	91.8%	-0.6%	N.A.	65.8%	-5.9%
Finland	64.0%	56.4%	-7.6%	94.5%	92.1%	-2.4%	95.4%	93.2%	-2.2%	90.6%	88.5%	-2.1%	73.9%	60.5%	-13.4%
France	60.2%	40.8%	-19.4%	97.0%	94.8%	-2.2%	97.8%	96.1%	-1.7%	95.1%	92.4%	-2.7%	75.4%	42.6%	-32.8%
Germany	75.5%	55.6%	-19.9%	96.5%	90.7%	-5.8%	98.8%	96.0%	-2.8%	96.0%	92.9%	-3.1%	80.2%	67.2%	-13.0%
Ireland	74.7%	54.2%	-20.5%	98.1%	92.2%	-5.9%	97.7%	92.8%	-4.9%	95.7%	89.2%	-6.5%	89.7%	68.4%	-21.3%
Italy	52.0%	35.9%	-16.1%	96.8%	86.8%	-10.0%	96.1%	93.8%	-2.3%	85.1%	91.8%	6.7%	48.2%	47.0%	-1.2%
The Netherlands	51.2%	73.8%	22.6%	95.6%	94.8%	-0.8%	83.1%	95.1%	12.0%	43.1%	91.5%	48.4%	77.0%	62.7%	-14.3%
Norway	55.0%	62.9%	7.9%	91.8%	90.2%	-1.6%	97.1%	93.2%	-3.9%	93.2%	90.4%	-2.8%	84.9%	75.0%	-9.9%
Sweden	67.0%	56.7%	-10.3%	93.4%	92.5%	-0.9%	96.4%	95.1%	-1.3%	94.7%	91.5%	-3.2%	85.4%	76.7%	-8.7%
United Kingdom	N.A.	68.5%	-23.6%	N.A.	93.1%	-5.2%	N.A.	92.5%	-7.0%	N.A.	89.3%	-7.3%	N.A.	70.1%	-4.1%
United States	69.4%	61.0%	-8.4%	96.4%	91.5%	-4.9%	96.8%	92.2%	-4.6%	94.2%	88.0%	-6.2%	82.9%	70.4%	-12.5%
Mean	64.4%	57.6%	-9.0%	95.7%	92.2%	-3.3%	95.7%	94.1%	-2.0%	88.1%	90.4%	1.2%	77.9%	62.1%	-10.5%

a: For countries with missing data in 1970, change is calculated using oldest available data

Data Source: OECD Employment and Labour Force Statistics Database 2008

due to increasing durations of education, and ages 55-64, due to earlier retirement, especially in conservative-corporatist countries (Myles and Quadagno 2002; Orloff 2002). It cannot be argued, however, that women's employment is increasing exclusively as a replacement to men's employment because the rise in women's employment does not directly parallel the decline in men's employment. Rather, women's labor force participation should be seen as complementing as well as replacing men's employment.

Within these general trends, there is some clustering of countries around particular levels of female participation by the end of the period. The Scandinavian welfare states of Norway, Sweden and Denmark have the highest level of female labor force participation rates and some of the highest female share of the labor force. Interestingly, these countries also generally have the highest levels of men's labor force participation as well, reinforcing my previous point. The clear laggard in women's labor force participation is Italy, although labor force participation rates for both genders are low in Italy. These trends in women's labor force participation rates, while interesting, tell us nothing about the nature or quality of women's employment, and it is in this area that we find the most substantial cross-national differences in outcomes between men and women.

Part-Time Employment: An important feature of women's employment outcomes is the prevalence of part-time work among women. Information using country-based definitions of part-time employment is presented in Table 4.4. It is important to note that these statistics are not completely comparable due to cross-national differences in the definition of part-time work. For example, in the United States, the part-time work cutoff

Table 4.4: Part-Time Employment in 14 Welfare States, 1979-2008, Based on Country Definitions of Part-Time Work.

	Part-time Employment as a Proportion of Total Employment						Women's Share of Part-Time Employment		
	Total			Women					
Country	1979	2008	Change Over Period	1979	2008	Change Over Period	1979	2008	Over Period
Belgium	6.0%	22.6%	16.6%	16.5%	41.5%	25.0%	88.9%	81.9%	-7.0%
France	8.1%	16.9%	8.7%	17.0%	29.4%	12.4%	82.1%	81.8%	-0.3%
Austria	7.6%	23.3%	15.7%	18.0%	41.5%	23.5%	87.8%	81.2%	-6.6%
Germany	11.4%	26.2%	14.8%	27.6%	45.8%	18.2%	91.6%	79.8%	-11.7%
Italy	5.3%	14.3%	9.0%	10.6%	27.9%	17.2%	61.4%	77.8%	16.4%
The Netherlands	16.6%	35.2%	18.6%	44.0%	59.3%	15.3%	76.4%	76.9%	0.5%
Ireland	5.1%	18.5%	13.3%	13.1%	32.5%	19.4%	71.2%	76.9%	5.7%
United Kingdom	16.4%	25.3%	8.9%	39.0%	41.9%	2.9%	92.8%	76.2%	-16.6%
Norway	27.3%	26.8%	-0.5%	51.5%	41.9%	-9.6%	76.8%	73.9%	-2.9%
Sweden	23.6%	23.6%	0.0%	46.0%	35.9%	-10.2%	87.5%	71.7%	-15.8%
Denmark	22.7%	24.7%	1.9%	46.3%	36.5%	-9.9%	86.9%	69.2%	-17.8%
Canada	13.8%	18.4%	4.6%	25.3%	26.4%	1.1%	71.0%	67.8%	-3.2%
United States	16.9%	17.4%	0.6%	26.8%	24.6%	-2.2%	67.3%	65.9%	-1.4%
Finland	6.6%	13.3%	6.7%	10.6%	18.2%	7.6%	74.7%	65.5%	-9.2%
Mean	13.4%	21.9%	8.5%	28.0%	35.9%	7.9%	79.7%	74.8%	-5.0%

Data Source: Bastelaer, Lemaitre and Marianna 1997 and OECD Employment and Labour Force Statistics Database 2009

is 35 hours a week while in several European countries it is self-defined. However, as can be seen in the Appendix 3, recently available data based on a common definition (usually working hours of less than 30 hours per week) but covering a shorter time span, reveals relatively similar levels of part-time employment across countries and over time between the two measures

Relatively few men are in part-time work across all countries, while a substantial portion of women work part-time in many countries, resulting in a gender imbalance in the ratio of part-time work. Women's employment is characterized by significant, and increasing, rates of part-time employment, with 36% of employed women working part-time, on average, by 2008, which is an increase of 8% from 1979. Moreover, while women's share of part-time employment has decreased over the period, women are still the majority of part-time workers in all countries, ranging from 66% in Finland to 82% in Belgium by 2008.

The prevalence of part-time work is typically attributed to both supply and demand factors. Women often 'choose' part-time work as a way to balance work and family life, while employers view part-time workers as more flexible than full-time workers (Gornick 1997; Blossfeld and Hakim 1997; O'Connor, Orloff and Shaver 1999; Moen 2003). Research has documented an increase in part-time work, along with other forms of non-standard employment, in recent years (Kalleberg, Reskin, and Hudson 2000; O'Reilly, and Fagan 1998).

While women are the majority of part-time workers in all countries, the nature and quality of part-time work varies across institutional contexts. The structure of part-time jobs maps reasonably well to Esping-Andersen's (1991) tripartite regime typology,

so I use this as a descriptive tool below; however, it is important to keep in mind that there are substantial intra-cluster variations in the nature and quality of part-time employment (O'Connor, Orloff and Shaver 1999). In the liberal welfare states, most notably the U.S., Ireland, and to a lesser extent, Canada, the majority of part-time jobs are 'bad' jobs with low wages, low skills, high turnover, poor working conditions, and short hours (O'Connor, Orloff and Shaver 1999; Robson et. al. 1999; Kalleberg, Reskin, and Hudson 2000). Moreover, part-time workers, especially in the United States, rarely have benefits. In fact, some researchers have traced the increase in part-time work to the desire of employers to avoid paying benefits (O'Reilly, and Fagan 1998; Kalleberg, Reskin, and Hudson 2000). Finally, part-time women workers in the liberal countries earn significantly less than their full-time counterparts (Gornick 1994; Gornick and Jacobs 1996; Robson et. al. 1999). This may explain the low rates of part-time employment in these countries. However, there are significant 'within cluster' differences across the liberal cluster, with institutional factors such as government wage-setting policies, the extent of unionization, and union practices in relation to part-time workers all contributing to increased pay among part-time workers (Marie-Gabrielle and Starzec 1992; Gornick 1994; Gornick and Jacobs 1996; Daly 1997; O'Connor, Orloff and Shaver 1999).

Due to the high levels of corporatism, high levels of public employment, and a dominant ideology of gender and class egalitarianism, part-time work in the social democratic countries is more likely to be in 'good' jobs (Esping-Andersen et. al. 2002). These jobs tend be located in the public sector and have relatively high wages, low turnover, good working conditions and long, but still part-time, hours (Huber and

121

Stephens 2001). Women in social democratic countries, particularly in Sweden, use part-time work as a strategy for balancing work and family demands (Moen 1989; Kalleberg and Rosenfeld 1990). There is only limited evidence about part-time work in conservative-corporatist countries. This is in part due to the relatively low level of female labor force participation of all types in these countries. The lone exception to this rule is the Netherlands, in which part-time work was encouraged during this period, especially among women, in a bid to curb high unemployment and help women balance work and family demands (Orloff 2004). However, the limited evidence we do have suggests that part-time work, because of mediating institutional factors, tends to be located in 'good' jobs in the conservative-corporatist countries (Marie-Gabrielle and Starzec 1992; Drobnic, Blossfeld, and Rohwer 1999; Robson et. al. 1999).

While many women work part-time across countries, not all women who work part-time do so voluntarily. Table 4.5 contains information on involuntary part-time employment among women. Involuntary part-time employment is defined by the OECD as those working part-time (based on country definitions of part-time employment) who usually work full-time but are not due to economic slack, who usually work part-time but are working fewer hours in their jobs due to economic slack, and those who cannot find full-time work, but want it (OECD 2007). On average, across countries, 15% of women working part-time are doing so involuntarily by 2008, a small increase from 1979.

Table 4.5: Involuntary Part-Time Employment in 14 Welfare States, 1983-2008, Based on Country Definitions of Part-Time Work.

Country	Female Involuntary Part-Time Employment, as a % of Total Female Employment			Female Involuntary Part-Time Employment, as a % of Female PT Employment		
	1983[a]	2008	Change Over Period	1983[a]	2008	Change Over Period
Finland	2.2%	4.7%	2.5%	20.3%	31.1%	10.8%
France	6.7%	6.4%	-0.3%	28.3%	28.3%	0.0%
Italy	1.9%	8.8%	6.9%	11.2%	28.3%	17.1%
Sweden	5.6%	4.3%	-1.3%	18.9%	21.9%	3.0%
Canada	7.2%	5.7%	-1.5%	25.8%	21.6%	-4.1%
Germany	1.4%	6.7%	5.3%	5.5%	17.5%	12.0%
Belgium	3.7%	4.7%	0.9%	16.6%	13.9%	-2.8%
Denmark	3.5%	2.3%	-1.2%	9.3%	9.5%	0.2%
Austria	1.1%	2.8%	1.7%	5.1%	9.0%	3.9%
United Kingdom	2.9%	2.5%	-0.4%	7.1%	6.5%	-0.7%
United States	1.4%	1.4%	0.0%	5.4%	6.0%	0.7%
Norway	9.1%	1.6%	-7.6%	22.4%	5.1%	-17.3%
Ireland	1.5%	1.3%	-0.2%	8.3%	3.7%	-4.6%
The Netherlands	1.3%	1.8%	0.5%	2.9%	3.0%	0.0%
Mean	3.5%	3.9%	0.4%	13.4%	14.7%	1.3%

Data Source: OECD Employment and Labour Force Statistics Database 2009
a: Data is from 1995 for Austria, 1989 for Finland and Norway, 1993 for France, 1987 for Sweden, and 1998 for the U.S.

The Male-Female Wage Gap: Information on the male-female wage gap is presented in Table 4.6. The wage gap is presented as a percentage of men's wages, so a wage gap of 50% would indicate that women make 50% less than men, on average. The wage gap has declined between 1960 and 2008, from an average of 31% to an average of 18%; however, there remains a substantial wage gap between men and women. By the end of this time period, the countries with the lowest wage gap include Denmark, Belgium, Sweden, and Norway, while Austria, Germany, and the U.K. have larger wage gaps. There is little in the way of "clustering" in the wage gap, with substantial variation

123

Table 4.6: The Male-Female Wage Gap and Occupational Gender Segregation in 14 Welfare States from 1960-2008

Country	Male-Female Wage Gap as a Percentage of Men's Wages				Occupational Gender Segregation Index					
	1960	1984	2008	Change Over Period	1970 or 1971	1980 or 1981	1990 or 1991	2000	2007	Change Over Period
Austria	--	34.0%	27.5%	-6.6%	56.1	52.0	51.9	50.7	52.4	-3.7
Belgium	35.8%	25.3%	12.7%	-23.2%	--	--	--	56.8	51.6	-5.2
Canada	--	37.0%	21.4%	-15.6%	60.0	54.3	55.7	54.1	--	-6.0
Denmark	29.1%	14.9%	9.0%	-20.1%	--	--	--	50.9	51.4	0.5
Finland	35.4%	26.9%	19.6%	-15.8%	64.6	60.5	62.0	54.7	59.0	-5.6
France	23.9%	19.3%	18.9%	-5.0%	56.8	56.1	53.4	50.8	53.4	-3.4
Germany	32.3%	29.5%	24.3%	-8.0%	--	--	--	54.5	53.4	-1.1
Ireland	49.7%	31.7%	18.7%	-31.1%	65.8	62.2	54.7	50.7	55.8	-10.0
Italy	--	19.6%	16.1%	-3.4%	48.2	49.8	40.8	44.5	47.2	-1.0
The Netherlands	26.8%	23.0%	17.2%	-9.6%	66.7	64.7	59.1	50.2	50.4	-16.3
Norway	28.2%	16.1%	14.3%	-13.9%	63.1	57.1	53.8	55.8	54.4	-8.7
Sweden	15.7%	9.6%	13.8%	-1.9%	61.8	56.1	53.7	48.1	54.0	-7.8
United Kingdom	41.0%	33.6%	23.2%	-17.8%	--	66.1	62.1	53.4	50.6	-15.5
United States	--	33.4%	20.0%	-13.4%	58.6	55.4	57.1	55.2	--	-3.4
Mean	31.3%	25.3%	18.3%	-13.2%	60.2	57.7	54.9	52.2	52.8	-6.2

Data Sources: Wage gap data are from ILO Laborsta Database (2009) and the OECD Earnings Databases (2009). Segregation data are Author Calculations of the Sex Standardized Index of Dissimilarity from the ILO SEGREGAT Database 2009 and European Commisson 2009. Calculations are based on National Standard Classification of Occupations.

in wage gaps within regime types. Explanations for this persistent wage gap are many and varied, some of which were detailed in the second chapter and will also be explored in this chapter and subsequent chapters.

Occupational Gender Segregation: Information on occupational gender segregation, or the extent to which men and women are segregated into different occupations, is also presented in Table 4.6. Occupational gender segregation is measured using the size-standardized index of dissimilarity. This index can be interpreted as the percentage of men or women that would have to be removed from the labor force to bring about a perfect correspondence between the sex composition of each occupation and that of the entire labor force, effectively comparing the existing distribution to a perfectly gender neutral one (Charles and Grusky 2004). As with the male-female wage gap, occupational gender segregation has generally declined over time, but remains persistent.

Occupational gender segregation is an important measure of women's employment inequality because high levels of segregation between men and women has been shown to result in larger reward differentials between men's and women's occupations. In particular, in comparative research, Charles and Grusky (2004) argue that sex segregation is really made up of two components, horizontal sex segregation and vertical sex segregation. Horizontal segregation refers to the segregation of men and women along the manual-nonmanual occupations divide, respectively. Vertical segregation refers to the tendency of men to occupy the most desirable occupations on each side of the manual-nonmanual divide (Charles and Grusky 2004). Either of these types of segregation can result in reward differentials in men's and women's jobs. Moreover, research on occupational gender segregations in the United States

demonstrates that the occupations in which women are concentrated tend to be rewarded at lower levels with fewer benefits, are less stable, and offer fewer opportunities for advancement and promotion than men's jobs (Gunderson 1989; England 1992; Diprete 1989). However, it is not the case that high levels of gender segregation are invariably associated with a large gender pay differentials. For example, both Norway and Sweden have relatively high levels of gender segregation, but a low male-female wage gap. I explore this issue later in this chapter.

4.3 Effects of Women's Employment Outcomes on States and Families.

The steady increases in women's labor force participation across welfare states and continued women's employment inequality have spurred investigation into the effects of women's labor market participation on families and the state (Esping-Anderson 2002). This research reveals that women's labor force participation affects families and the state in mainly positive ways.

In particular, a high level of female employment, especially in an era of population aging and early retirement among men, is necessary for financing the welfare state (Myles and Quadagno 2002). Research demonstrates that countries with high levels of female employment have higher tax revenues than countries with lower levels of female employment, making it easier for these countries to maintain welfare state programs in an era of fiscal austerity (Crouch and Streeck 1997; Esping-Andersen et. al. 2002). Moreover, high levels of female employment have been associated with economic growth, a result highly desired by many countries, and with lowering levels of wage inequality (Ruhm and Teague 1995; Aronja, Ladaique, and Pearson 2001). However, the

126

causal relationship between these effects is somewhat unclear because one could

postulate mechanisms in which economic growth allows for the expansion of female

labor force participation, as well as the other way around.

Additionally, female labor force participation has also been found to lower levels

of absolute and relative poverty, among both adults and children. This effect increases

societal and family welfare as well as lowering welfare state expenditures (Huber et. al.

2001; Vleminkx and Smeeding 2001). Finally, women's employment, especially when

paired with high quality childcare, has been found to have positive effects on children's

early development (Waldfogel 2002).

It is easy to see why states and policymakers would be interested in increase rates

of women's labor force participation. In fact, the European Union, recognizing these

benefits, has set a goal for all member nations to reach 60% female labor force

participation by the year 2010 (Rubery, Smith, and Fagan 1999).

However, it is clear that continued women's employment inequality works to reduce rates

of, and the rewards to, women's labor force participation and, thus, limits the positive

effect of women's labor force participation on families and the state.   In addition,

women's employment inequality likely reduces tax revenues generated by women's labor

force participation and increases poverty rates, especially among children and single

mothers (Esping-Andersen et. al. 2002). Within these general trends, women's

employment outcomes vary widely across welfare states due to different ideologies,

structures, and policies.

4.4 Labor Markets, Welfare States, and Women's Employment Inequality in Comparative Perspective

Variations and changes in women's employment outcomes are due to a variety of different factors including a decline in manufacturing work and a corresponding rise in service work, rising real wages for women and declining real wages among men, business cycles, increasing educational and human capital attainment among women, declining marriage and fertility rates, the relative political power of women, left parties, and unions, and government policies and practices (England and Farkas 1986; Diprete and Grusky 1990; Diprete and Nonnemaker 1997; Blau, Ferber, and Winkler 1998; Daly 2000; Orloff 2002; Esping-Andersen et. al. 2002). The main factors I consider in this research are family policies, which I review in the next chapter, while employment in services, women's educational attainment, economic growth, rates of unemployment, the long-term success of left-leaning political parties, the political participation of women in government, the degree of corporatism, the type of taxation, and public sector employment are considered to be parallel processes that may be more closely associated with women's employment outcomes than family policies. In this section, I describe the literature that leads me to expect that each of these outcomes will be associated with women's employment outcomes. As noted in the previous chapters, these literatures often work without reference to each other, so there is little evidence to suggest which of

Figure 4.1: Average Rates of Employment in Services

■ 1960 ■ 1984 □ 2008

52%

39%

28%
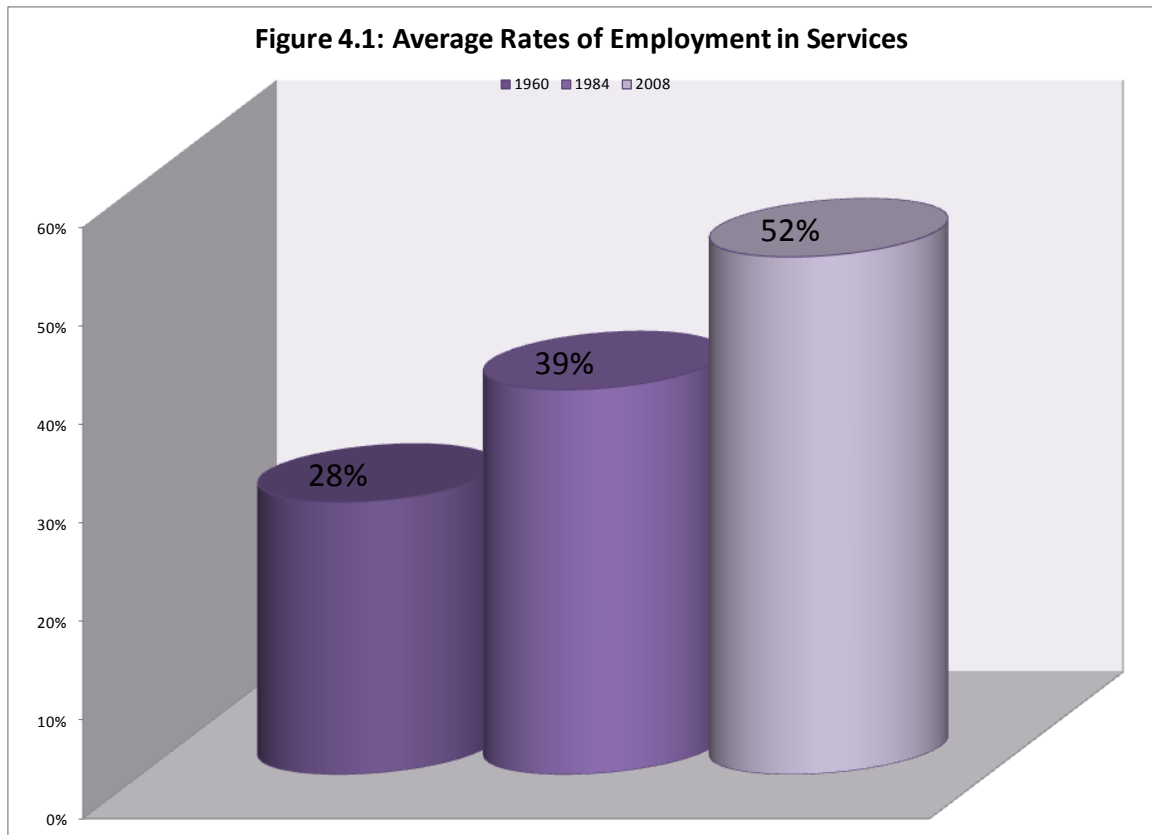
these sets of explanations is more, or less, strongly related to women's employment

outcomes.

Beginning with labor market processes, the growth in service sector employment

and the transition to what has been called the postindustrial economy (Myles and

Quadagno 2002) is likely the most important explanation for, and can be the most clearly

linked to, women's increased labor force participation but continued employment

inequality. Changes in service sector employment over time, by regime type, are

presented in Figure 4.1. The postindustrial economy is characterized by the massive shift

of employment from the manufacturing to the service sector over the last 20-30 years

caused by a mixture of increasing competition from cheaper imported products and

international firms, rising costs, and technological changes (Rubin 1996). This increase

in employment in services has been shown to increase rates of female labor force participation because women tend to be concentrated in service sector or nonmanual jobs (Huber and Stephens 2000; Berg and Kalleberg 2001; Charles and Grusky 2004). However, service sector jobs, especially in the U.S., Canada, Ireland, and the U.K., are also generally associated with poor employment outcomes for women because they generally require fewer skills and are consequently lower paying, with lower levels of benefits and job stability. In particular, service sector employment increases the concentration of women in part-time work because the flexible and unstable nature of the work in this sector results in increasing levels of nonstandard employment, such as temporary, contract, or part-time employment (Kalleberg, Reskin, and Hudson 2000). The relatively low pay of service sector employment should increase the male-female wage gap. Finally, increasing service sector employment should result in higher levels of occupational gender segregation because the expansion of the service sector tended to draw women workers into the lower levels of nonmanual (service) sector, while men tended to dominate the most desirable occupations with the highest rewards, in both manual and nonmanual occupations, reinforcing both vertical and horizontal sex segregation (Rubin 1996; Charles and Grusky 2004).

Average years of schooling and, consequently, educational attainment for both women and men has increased substantially across all countries over the period (Figure 4.2). Increasing human capital characteristics among women generally, and increasing levels of educational attainment, in particular, have been associated with higher levels of female labor force participation across countries (England and Farkas 1986; Blau, Ferber,

Figure 4.2: Average Changes in Labor Market Processes
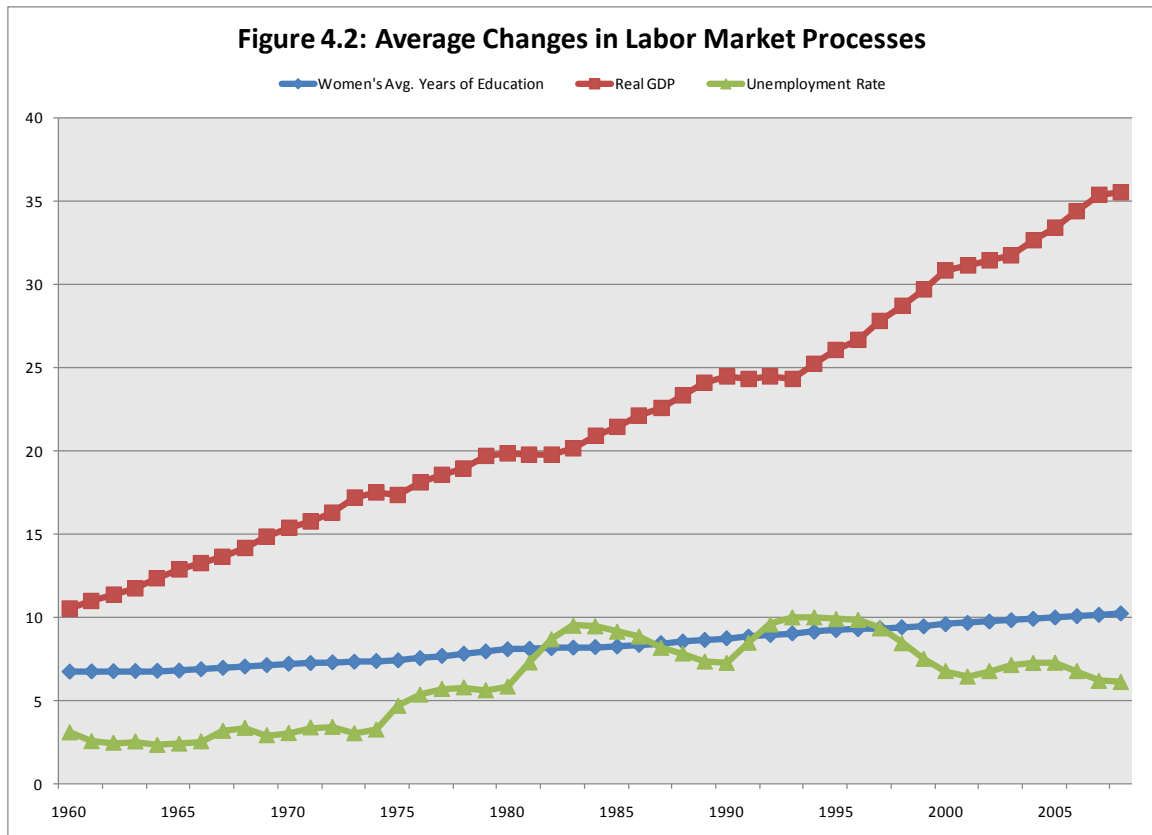
and Winkler 1998; Hicks and Kenworthy 2008). Increasing levels of educational

attainment among women should reduce women's concentration in part-time work as

well the male-female wage gap by increasing women's human capital, thus increasing

their labor supply, ability to work full-time, and competitiveness in wages with men

(England and Farkas 1986; Blau, Ferber, and Winkler 1998; England, Hermsen, and

Cotter 2000). There appear to be differential effects of women's educational attainment

on the male-female wage gap across countries, with the wage gap being larger among

less educated women in the U.K., the U.S., Germany, and the Netherlands, but no

differences by education in the Nordic countries (Sigle-Rushton and Waldfogel 2007).

However, it is likely that demand-side mechanisms, particularly employment in services,

have a stronger effect on women's employment outcomes than women's educational

131

attainment (Reskin 1993). Women's educational attainment should not be related to occupational gender segregation, with research finding that occupational gender segregation does not seem to be strongly influenced by supply-side characteristics (Roos 1983; Reskin 1993; Charles and Grusky 2004).

I use economic growth (measured as real GDP per capita) and rates of unemployment to account for the effects of the business cycle (Figure 4.7). Economic growth has been shown to increase women's labor force participation (Pampel and Tanaka 1986; Mammen and Paxson 2000). The effects of economic growth on women's concentration in part-time employment and occupational gender segregation are less clear.

Higher unemployment rates should be associated with lower levels of women's labor force participation, a higher male-female wage gap, and decreased occupational gender segregation because women and nonwhites are in areas of the labor market particularly susceptible to cyclical recessions that are endemic in the "new economy" (Diprete 1981; Cummings 1987). Unemployment rates may lower women's concentration in part-time work because men will be more likely to work in part-time jobs during recessions.

Turning to welfare states processes, I consider three elements of the political context that have been shown to or should influence women's employment outcomes: the long-term success of left parties, the relative degree of corporatism, and the political participation of women in government. Changes in these variables across countries are summarized in Figure 4.3. In particular, the long-term success of left, or Social

Figure 4.3: The Political Context in 1960
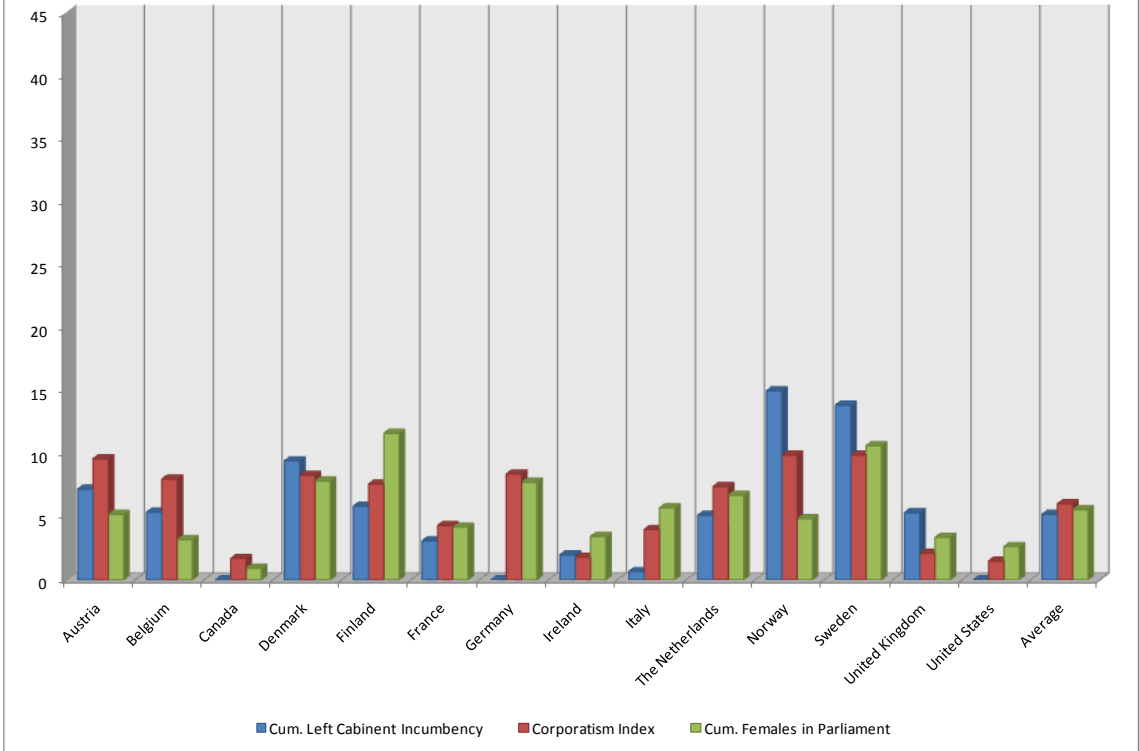
The Political Context in 2008

133
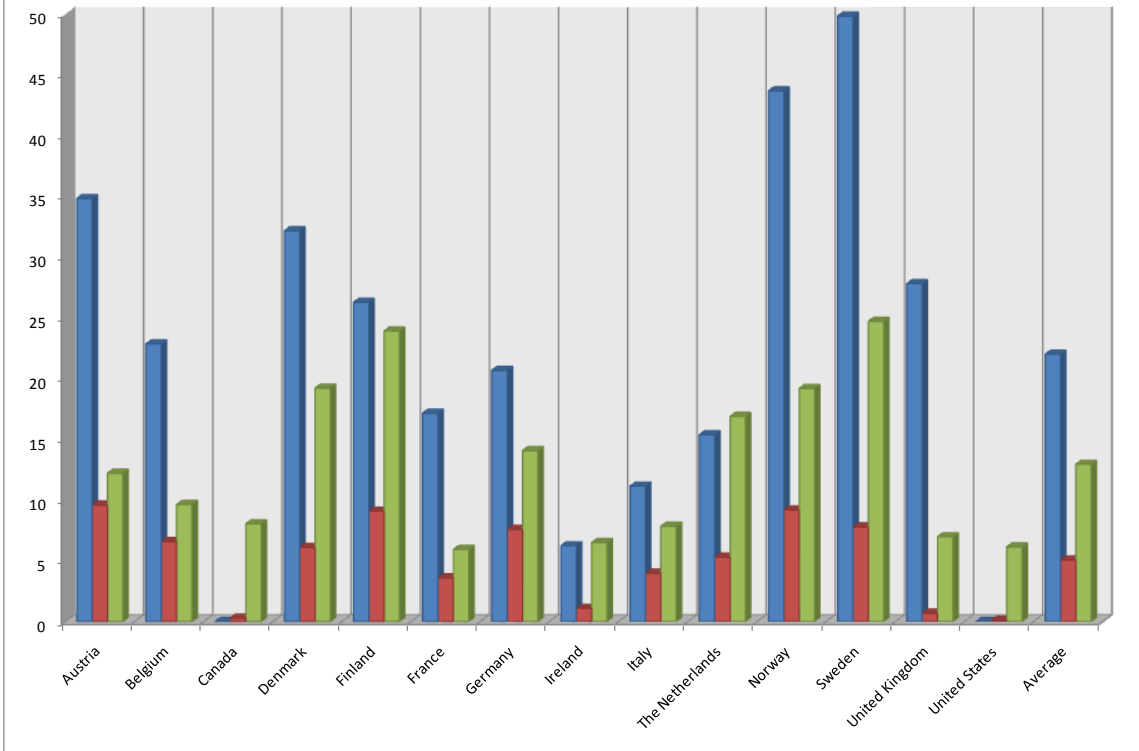
Democratic parties, especially when combined with a powerful and centralized trade union movement that negotiates with the government and employers, called corporatism, tends to result in a leveling of the redistribution system, maintenance of (near) full employment, and large public sectors with public delivery of services all aimed at correcting inequalities created by the market (Esping-Andersen and van Kersbergen 1992; Huber, Ragin, and Stephens 1993; Huber and Stephens 2001). As such, the long-term success of left parties and high levels of corporatism has been shown to lead to higher levels of women's labor force participation and a lower male-female wage gap (Gornick and Jacobs 1996; Huber and Stephens 2000; Eliason, Stryker, and Tranby 2008). However, the long-term success of left parties and high levels of corporatism is likely associated with increasing levels of women's concentration in part-time work, with part-time work being encouraged in these countries as a strategy for women to use in balancing work and family demands and to reduce unemployment (Moen 1989; Kalleberg and Rosenfeld 1990).   The long-term success of left parties and high levels of corporatism is likely also associated with high levels of occupational gender segregation, with Charles and Grusky (2004) finding that horizontal segregation is particularly strong in such countries, reflecting a "different but equal" work norm in these countries.

There is good reason to believe that when women are more integrated in the political context, they will be more integrated into the economic context and more able to exert control over it, leading to higher rates of female labor force participation, decreased gaps between men and women in wages and occupational gender segregation, and a more even distribution of part-time employment (O'Connor 1993; Esping-Anderson et. al. 2002, Petit and Hook 2005). In particular, high levels of female representation in

democratic politics has been associated with higher levels of female labor force participation (Iversen and Rosenbluth 2008).

I also consider these political context factors because they may be important mediators between the labor market processes described above and women's employment outcomes. In particular, the long-term success of left parties and the degree of corporatism leads to an emphasis on redistribution, equality, and maintenance of (near) full employment, which may blunt the negative effect of employment in services and the business cycle on women's employment outcomes. Moreover, these same political context factors may be important mediators in any relationship between family policies and women's employment outcomes. In particular, because left parties and female legislators are likely to pass more generous family policies than other political systems, not including them in a model of family policies on women's employment outcomes may lead to spurious findings (Wennemo 1994; Gauthier 1996; Ferrarini 2003; Lambert 2008). Recent evidence has found that the proportion of women in parliament is causally connected to the introduction or extension of public childcare provision, parental leave, and part-time work legislation (Bleijenbergh and Roggeband 2007).

Another welfare state process I consider is the way in which welfare states collect taxes from couples. In particular, joint taxation, in which the basic unit of taxation is the married couple[29] and larger tax burdens are placed couples who both work higher paying jobs or long hours, has been shown to reduce the female labor force participation rate and increase the male-female wage gap when compared to individual taxation, where there is

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[29] In joint taxation, the income of both spouses is added together and then halved; the standard rate of income tax is then applied to each half of the joint income, and the amount of tax calculated is then doubled to give the couple's total tax liability for the year.

no distinction by employment of either partner (Dingeldey 2001; Jaumotte 2003). There is no clear relationship between the type of tax and women's concentration in part-time work or occupational gender segregation.

The final welfare state process I consider is public sector employment (Figure 4.4). The large public sectors that result from the combination of long-term Social-Democratic incumbency and corporatism emphasize service delivery. These large, service oriented public sectors have served to generate high levels of female labor force participation through both supply and demand factors (Huber and Stephens 2000, Eliason, Stryker, and Tranby 2008). High public sector employment has also been connected to a lower male-female wage gap, because of the compressed wage

Figure 4.4: Civilian Government Employment Across Regime Types

Regime Type	1960	1984	2008
Average	6%	13%	13%
Liberal	8%	12%	12%
Conservative-Corporatist	5%	9%	9%
Social Democratic	7%	20%	21%
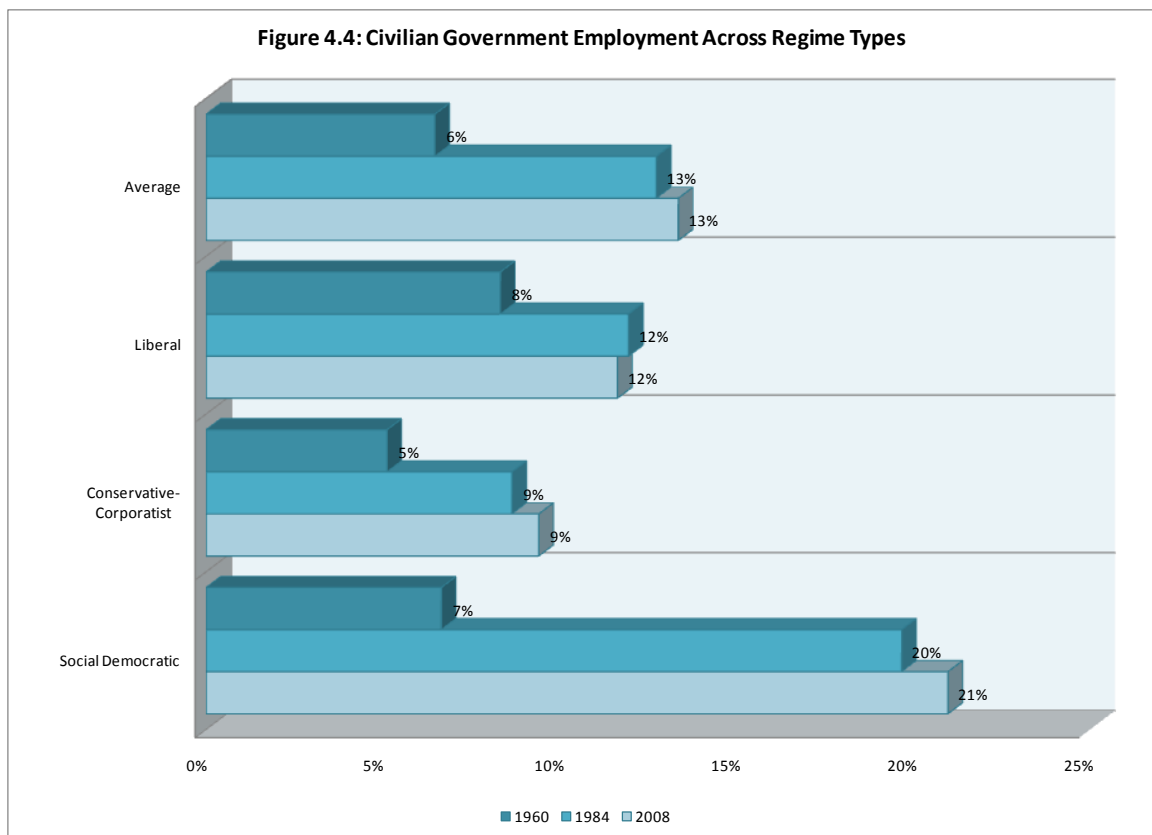
distribution in public sector jobs (Gornick and Jacobs 1996). However, high public

sector employment is also likely to increase women's concentration in part-time work,

because public sector jobs are more likely to be part-time in the social democratic welfare

states. They are also more likely to have high levels of occupational gender segregation,

because jobs in public service delivery in these states are largely held by women, and

women can maximize their pay by working in the public sector (Hansen 1997; Huber and

Stephens 2000; Huber and Stephens 2001).

It should be clear from the discussion in this section that service sector jobs mean

very different things across regime types. Women are likely to be in the public service

sector in the social democratic states (Huber and Stephens 2000), because they tend to be

well-paid with good benefits and possibilities for advancement. However, the social

democratic welfare states have been criticized for having high levels of gender

segregation due to this emphasis on public employment, although this gender segregation

doesn't appear to be connected with a substantial pay gap between men and women

(Leira 1992; Orloff 1996; Hansen 1997; Leira 2002; Mandel and Semyonov 2003;

Charles and Grusky 2004).

Women also tend to be segregated into service sector jobs in the liberal welfare

states; however, these jobs are very different from service sector jobs in the social

democratic states. As described in the previous chapters, service sector jobs are generally

located in the secondary labor market (Doeringer and Piore 1971; Bielby and Baron

1986; Edwards 1989). These jobs require few skills and tend to be low paying, have low

or no benefits, and offer limited opportunities for advancement (England 1992; Reskin

1993). By being segregated into the service sector, women tend to be segregated into

'bad' jobs with low rewards, making the wage gap between men and women particularly large in the liberal countries (England 1992; O'Connor, Orloff and Shaver 1999). However, it is important to keep in mind that research on the United States has revealed that jobs in which women dominate, regardless of sector or task, pay less than jobs in which men dominate (England 1992; England, Thompson, and Aman 2001). Thus, my research will need to carefully account for the difference in the type and quality of service sector jobs across regime types. In the methods section of the previous chapter, I describe how I dealt with this difference, as well as the tight relationship between long-term left party success and corporatism.

There are a variety of other factors that have been shown to influence women's employment outcomes that I do not consider in my analysis because they cannot be measured at the aggregate level or are not adequately measured at the aggregate level. For example, the existing literature demonstrates that women's employment outcomes change over the family life course, especially with marriage and childbearing. As described in the previous chapter, women's labor supply in the United States is related to both marriage and fertility, with declines in labor force participation associated with each of these events (Heckman and Macurdy 1980; Moen 1985; Hyslop 1999; Orloff 2002). Moreover, marriage and caring for young children significantly increases the odds of discontinuities in women's work lives (Moen 1985; Han and Moen 1999). However, this relationship is changing over time, with declining fertility associated with increasing women's labor force participation and declining work discontinuities related to care work (England and Farkas 1986; Forest, Moen, and Dempster-Mclain 1995; Blau, Ferber, and Winkler 1998; Orloff 2002). Moreover, women's labor force participation is increasing

138

even among young mothers, with the majority of the increase in women's employment across all countries over the last 10 years or so coming from this group (Orloff 2002; Esping-Andersen et. al. 2002).

In their analysis of 1994 ISSP data from Austria, Australia, Canada, Germany, Israel, Italy, the Netherlands, New Zealand, Norway, Sweden, the United Kingdom, and the United States, Stier, Lewin-Epstein, and Braun (2001) find that the family life course profoundly impacts rates and quality of female labor force participation across countries. However, they also find that the family life course is mediated by institutional and cultural contexts. Stier, Lewin-Epstein, and Braun (2001) find that most women work full-time before having children, especially in the liberal and social democratic countries. The lowest rates of employment for women without children are in the conservative regime type. Correspondingly, the rate of part-time employment in all countries is relatively low for this group of women.

Stier, Lewin-Epstein, and Braun (2001) also find that employment outcomes change significantly for women with pre-school age or younger children in all countries. In the social democratic regime type, women tend to either be in part-time work or out of the labor force during this period. In the liberal countries, the majority of women with pre-school age children either leave the labor force altogether or stay in full-time work. Subsequent analysis reveals that this split is highly related to the woman's position in the labor market, where women with higher incomes, high levels of education, and better job tenure and stability tend to stay in full-time work. Stier, Lewin-Epstein, and Braun's (2001) country selection makes understanding the trend among the conservative-

corporatist regime difficult to interpret, but it appears that most women leave the labor force during this period, especially in Germany (Drobnic, Blossfeld, and Rohwer 1999).

Employment patterns change again for women with school-age children, but these changes are again mediated by institutional and cultural contexts. In all countries, the majority of women re-enter the labor force once their children have reached school-age. However, in conservative-corporatist countries, more women stay out of the labor force than in the other countries, with the women who do work tending to choose full-time over part-time work in these countries. In the social democratic regimes, most women enter part-time work during this period, with relative minorities entering full-time work or leaving the labor force. There are apparent intra-cluster differences in the liberal regime, with women in the United States and Canada tending to enter full-time work, although a significant minority utilizes part-time work when they have school-age children. Women in the United Kingdom, on the other hand, are more likely to enter part-time work than be in the other two work statuses (Stier, Lewin-Epstein, and Braun 2001). Due to data limitations, I can only analyze age-graded differences in women's labor force participation rates and not other measures of women's employment inequality.

Similarly, in their analysis of LIS data from Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, Germany (East and West), Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Russia, Spain, Sweden, the United Kingdom, and the United States, Misra, Budig, and Boechmann (2010) find that differences in women's employment patterns are not so much driven by gender, as by gendered parenthood, with fathers employed at higher levels and mothers employed at significantly lower levels.

This effect remains present even when they control for individual and household-level factors, such as women's human capital, and partnered status and household income. These results are likely related to society's attitudes towards women's employment at various stages of the family life course. Treas and Widmer (2000), in their analysis of ISSP data, find that the residents of most countries endorse married women's full-time employment before children, and at least some level of employment once children have left home.

However, there are substantial variations across countries in attitudes towards the employment of mothers with children in the home. They identify three clusters of countries: work-oriented, family-accommodating, and motherhood-centered. People in work-oriented countries, which overlap substantially with the liberal and social-democratic countries, are the most likely to endorse women working throughout the family life course. They are the most favorable toward paid work, but usually recommend part-time employment for mothers of young children. Those in family-accommodating countries, including the majority of the conservative-corporatist countries, believe that mothers of small children belong at home and that mothers of school-age children should work only part-time. Respondents in motherhood-centered countries, such as the Netherlands, are the most likely to endorse mothers with young children staying home, but they display little consensus regarding mothers of school-age children (Treas and Widmer 2000). Jaumotte (2002) also finds that cultural attitudes remain major determinants of female participation.

Similarly, Misra, Budig, and Boeckmann (2010) and Budig, Misra, and Boeckmann (2009) find that employment patterns and the motherhood wage penalty are

141

associated with cultural support for women's employment, such that in countries where mothers work more, there is greater support for mothers' employment, and in reverse, where there is greater support for mothers' employment, mothers work more. They also find that cultural support for maternal employment and beliefs that maternal employment is not detrimental to child well-being are both linked to smaller wage penalties for motherhood. Unfortunately, attitudes towards women's employment are only available for a very limited number of years and so are not included in my analysis.

Stier, Lewin-Epstein, and Braun (2001) also investigate the effects of these employment patterns on women's wages. They find that in the liberal countries, and to a lesser extent, the conservative-corporatist countries, women's employment patterns are strongly linked to a woman's occupation and position in the labor force. Women with higher occupational statuses are less likely to have work interruptions, and consequently, do not face a strong wage penalty for having children. In the social democratic regime, women, regardless of class position, do not face strong wage penalties for employment deviations (Rice 1999; Stier, Lewin-Epstein, and Braun 2001).

Women's employment patterns over the life course are also affected by marital status, especially when combined with childbearing. Married women with children clearly have more options for employment patterns, so the variations in employment patterns described above are most likely to hold for married women with children. Sole parent families, however, are much more limited in their options for labor force participation. Sole parents, of either gender, are much more likely to work at least part-time across the family life course (Hao and Brinton 1997; O'Connor, Orloff and Shaver 1999). However, even with high rates of labor force participation, sole parent families

are much more likely to be in 'bad' jobs with low wages and job stability; consequently, they have higher rates of poverty than dual parent families, regardless of regime type (Vleminkx and Smeeding 2001; Esping-Andersen et. al. 2002). However, sole parent families tend to be better off in social democratic countries, and worse off in liberal countries, due to the types of jobs and support that is available in these countries (O'Connor, Orloff, and Shaver 1999).

4.5 Assessing the Role of Labor Markets and Welfare State Policies and Activities Using Linear Mixed Models

In this section, I conduct an empirical analysis of the labor market and welfare state factors described above to see the role that these factors play in the various measures of women's employment inequality described previously. This chapter uses the variables and modeling strategy describing in chapter 3. In particular, I use linear mixed models to assess the role of labor markets and welfare states, both separately and in the same model, on various measures of women's employment inequality. This analysis both reveals the relative role of each explanatory factor in generating women's employment inequality, and establishes a "base model" for use in subsequent chapters. This section is organized by women's employment outcome.

4.5.1 Women's Labor Force Participation Using Mixed Models

As shown in Appendix 14, 46% of the variation in women's labor force participation is between countries, and 46 % of the variation in women's labor force participation is across time, within countries. The remainder is residual variation.

Because this will be the first use of linear mixed models in this dissertation, I will

demonstrate each step in the model building process in the following tables. I do this

because the process of model building in linear mixed models is complicated by the fact

that both the mean structure and the covariance structure need to be specified, but these

structures are not independent of each other (Verbeke and Molenbergs 2000). In each

step and across steps, the best fitting model is determined by the use of information

criteria and (in the case of nested models) chi-square tests, with smaller information

criteria scores indicating a better fitting model to the data. These steps are summarized

for this and other women's employment outcomes in Tables 4.11 and 4.13.

The first step in this process is to select a preliminary mean structure, or fixed

portion of the model. This portion of the modeling process can be thought of as fitting a

standard linear regression model, and this process begins by modeling the functional

relation over time. (The process and results for all women's employment outcomes

considered is summarized in Appendix 8.) Next, I include relevant regressors and

interactions in the model (Table 4.7). In the first model, the labor market variables

described above are used to estimate female labor force participation rates. In this model,

lagged employment in services is significant and positively related to rates of female

labor force participation, such that each percentage point increase in employment in

Table 4.7: Estimating the Preliminary Mean Structure for Women's Labor Force Participation Rates

Variable	Labor Market		Welfare State		Base Model		Base Model Plus Interactions	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects								
Lagged Employment in Services	0.785 ***	(0.049)	--	---	0.622 ***	(0.056)	0.571 ***	(0.051)
Lagged Female Average Years of School	0.739 ***	(0.196)	--	---	0.645 ***	(0.191)	0.750 ***	(0.201)
Lagged Real GDP	-0.558 ***	(0.069)	--	---	-0.324 ***	(0.067)	-0.370 ***	(0.064)
Lagged Unemployment Rate	-0.413 ***	(0.061)	--	---	-0.244 ***	(0.057)	-0.243 ***	(0.054)
Lagged Left Cab and Corp Scale	--	---	-1.112 ***	(0.308)	0.019	(0.287)	-0.451	(0.337)
Lagged Cumulative Females in Parliament	--	---	0.531 ***	(0.064)	0.414 ***	(0.054)	0.163 *	(0.069)
Lagged Individual Taxation	--	---	-0.850	(0.468)	-0.466	(0.397)	-0.200	(0.364)
Lagged Public Sector Employment	--	---	0.814 ***	(0.050)	0.196 ***	(0.055)	0.286 ***	(0.078)
Lagged Female Share of the Labor Force	1.108 ***	(0.039)	1.089 ***	(0.044)	0.977 ***	(0.036)	0.909 ***	(0.034)
Time	0.095 *	(0.039)	0.049 *	(0.021)	0.006	(0.036)	0.122 ***	(0.036)
Liberal Regime* Lagged Employment in Services	--	---	--	---	--	---	0.129	(0.146)
Social Democratic*Lagged Public Sector Emp	--	---	--	---	--	---	-0.428	(0.388)
Liberal Regime	--	---	--	---	--	---	11.376 ***	(1.051)
Social Democratic Regime	--	---	--	---	--	---	-6.079 ***	(1.719)
Intercept	-11.219 ***	(1.257)	-0.393	(1.299)	-8.251 ***	(1.185)	-6.470 ***	(1.522)
Random Effects								
Residual	4.580 ***	(0.125)	5.070 ***	(0.139)	4.083 ***	(0.112)	3.592 ***	(0.098)
Proportion of Variance Explained	66.05%		62.42%		69.73%		73.37%	
N	666		666		666		666	
Countries	14		14		14		14	
-2 Log-Likelihood	-1968.82		-2033.45		-1895.89		-1812.75	
Fixed Effect Parms	7		7		11		15	
Random/Serial/Residual Parms	1		1		1		1	
AIC	3953.64		4082.91		3815.78		3657.51	
BIC	3989.65		4118.92		3869.80		3729.53	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

services yields about a .79 percentage point increase in female labor force participation. Women's average levels of educational attainment and women's share of the labor force are also positively and significantly related to rates of female labor force participation. On the other hand, lagged real GDP and lagged higher unemployment rates are both negatively related to female labor force participation rates.

The second model fits welfare state policies and activities to female labor force participation rates. The activity that stands out most is public sector employment, with each percentage point increase in public sector employment yielding a .82 percentage point increase in female labor force participation rates. Elements of the political context are also connected to rates of female labor force participation, with more women in parliament increasing rates of female labor force participation. Unexpectedly, higher scores on the left cabinet incumbency and corporatism scale are connected with decreasing female labor force participation rates.

In the third model, both factors are combined into the same model. With the exception of the left cabinet incumbency and corporatism scale and time, all of the variables that were significant in the first two models are significant and in the same direction as in the previous two models, although the magnitudes decrease somewhat[30].

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[30] Another potential model I might consider is to include dummy variables representing the social policy regimes and then including the relevant regressor to see if my independent variables fully mediate the effects of social policy regimes. The benefit to this approach is that it would ensure that this set of explanatory variables is sufficient to capture the social policy "regime" effects. However, I decided against this approach for two reasons. First, the descriptive tables and figures presented earlier in the chapter demonstrate that there is substantial intra-cluster variation in the outcomes, limiting the utility of social policy regime variables in the analysis. Second, as described in the second chapter, social policy regimes were developed using a mixture of my outcomes and independent variables and in that sense, can't be "true" independent variables.

The final model in this table adds theoretically relevant interaction terms to the model. These include an interaction between the liberal regime type and employment in services, and an interaction term between the social democratic regime type and public sector employment, along with the corresponding main effects of the regime type. For this outcome, these variables are not significant, although this model is generally a better fit to the data with smaller information criteria scores and a larger -2 log likelihood value. Because the interaction terms are not significant, I use model 3 as the base preliminary mean structure in the next stage of the model fitting process.

The second step in the model building process is specifying the preliminary random effects structure. (Table 4.8). In this step, intercepts and/or slopes are allowed to vary randomly across countries in four different patterns. First, I consider a model in which only the intercepts are allowed to vary across countries. In other words, in this model, each country has a different intercept, but the slopes are assumed to be the same across countries. Second, I consider a model in which the intercepts and the slope for time are allowed to vary randomly across countries, while all other slopes are held constant. Third, I consider a model in which the intercepts and slopes are allowed to vary across countries, but the covariances of the slopes are assumed to be zero (called a variance-components or independence model). Fourth, I consider a model in which all random effects are assumed to have a common variance and covariance (often called an exchangeable structure).

Even a cursory examination of the model fit criteria demonstrates that the variance components model with the full set of random coefficients (model 3) is the best

147

Table 4.8: Estimating the Preliminary Random Effects Structure for Women's Labor Force Participation Rates

Variable	Random Intercept		Random Intercept and Time Coefficient		Random Intercept, Coefficients, Variance Components (VC)		Random Intercept, Coefficients, Exchangeable Variance	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects								
Lagged Employment in Services	1.335 ***	(0.059)	1.431 ***	(0.058)	0.645 ***	(0.169)	0.648 *	(0.257)
Lagged Female Average Years of School	0.554 **	(0.203)	0.263	(0.293)	0.167	(0.577)	-0.088	(0.396)
Lagged Real GDP	0.103	(0.061)	-0.109	(0.070)	0.551 **	(0.209)	0.472	(0.264)
Lagged Unemployment Rate	0.158 ***	(0.044)	0.220 ***	(0.042)	0.266 **	(0.095)	0.253	(0.251)
Lagged Left Cab and Corp Scale	-7.281 ***	(0.684)	-5.964 ***	(0.994)	0.702	(1.168)	1.133	(0.982)
Lagged Cumulative Females in Parliament	-0.134	(0.081)	-0.228	(0.136)	-0.011	(0.404)	-0.328	(0.330)
Lagged Individual Taxation	0.980 *	(0.409)	-0.311	(0.407)	0.038	(0.539)	-0.112	(0.502)
Lagged Public Sector Employment	-0.048	(0.055)	0.225 **	(0.077)	0.317	(0.230)	0.180	(0.281)
Lagged Female Share of the Labor Force	0.417 ***	(0.036)	0.251 ***	(0.032)	0.850 ***	(0.160)	0.819 **	(0.256)
Time	-0.229 ***	(0.038)	-0.121	(0.062)	-0.362 **	(0.127)	-0.230	(0.254)
Intercept	-12.977 ***	(3.584)	-8.007	(4.194)	-13.696 *	(5.751)	-8.675 **	(3.113)
Random Effects								
Lagged Employment in Services	--	--	--	--	0.557 **	(0.804)	--	--
Lagged Female Average Years of School	--	--	--	--	1.611	(0.760)	--	--
Lagged Real GDP	--	--	--	--	0.587 ***	(0.187)	--	--
Lagged Unemployment Rate	--	--	--	--	0.261 ***	(0.798)	--	--
Lagged Left Cab and Corp Scale	--	--	--	--	0.537	(0.689)	--	--
Lagged Cumulative Females in Parliament	--	--	--	--	0.652	(0.676)	--	--
Lagged Individual Taxation	--	--	--	--	3.579 ***	(0.803)	--	--
Lagged Public Sector Employment	--	--	--	--	1.429	(0.712)	--	--
Lagged Female Share of the Labor Force	--	--	--	--	0.619	(0.705)	--	--
Time	--	--	0.138 ***	(0.028)	0.455 ***	(0.788)	--	--
Intercept	11.855 ***	(2.412)	12.742 ***	(2.578)	17.479 ***	(0.766)	--	--
Residual	2.496 ***	(0.070)	1.954 ***	(0.055)	1.167 ***	(0.038)	1.199 ***	(0.038)
Common Variance	--	--	--	--	--	--	0.914 ***	(0.098)
Common Covariance	--	--	--	--	--	--	-0.082	(0.024)
Proportion of Variance Explained	81.50%		85.51%		91.35%		91.11%	
N	666		666		666		666	
Countries	14		14		14		14	
-2 Log-Likelihood	-1612.64		-1477.70		-1263.76		-1300.70	
Fixed Effect Parms	11		11		11		11	
Random/Serial/Residual Parms	2		3		12		3	
AIC	3251.29		2983.40		2573.51		2629.40	
BIC	3309.80		3046.42		2677.04		2692.41	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

fit to the data. The majority of the random effects are significantly different from zero in this model. These random effects are the average case-specific deviations from the overall fixed effect mean[31]. Therefore, for random effects for which the accompanying fixed effect is significantly different from zero, the random effect indicates that the magnitude of that effect (or slope) is much larger in some countries and much smaller or

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[31] In this sense, random effects can be thought of as the standard deviation around the fixed effect "mean".

Variable	First-Order Autoregressive (AR1)		First-Order Autoregressive Moving Average (ARMA)		Temporal Gaussian with Measurement Error		Temporal Exponential with Measurement Error	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects								
Lagged Employment in Services	0.248 **	(0.052)	0.293 ***	(0.054)	0.328 ***	(0.054)	0.258 ***	(0.049)
Lagged Female Average Years of School	-0.670	(0.386)	-0.578	(0.349)	-0.234	(0.413)	-0.401	(0.363)
Lagged Real GDP	0.468 *	(0.184)	0.493 *	(0.188)	0.469	(0.221)	0.519 *	(0.205)
Lagged Unemployment Rate	0.058	(0.040)	0.076	(0.042)	0.087 *	(0.039)	0.076	(0.042)
Lagged Left Cab and Corp Scale	-0.338	(0.360)	-0.352	(0.384)	-1.226	(0.596)	-0.388	(0.360)
Lagged Cumulative Females in Parliament	0.367	(0.322)	0.267	(0.332)	0.063	(0.582)	0.228	(0.446)
Lagged Individual Taxation	0.038	(0.193)	-0.023	(0.193)	0.127	(0.241)	-0.018	(0.193)
Lagged Public Sector Employment	0.467 *	(0.191)	0.430 *	(0.209)	0.527 *	(0.232)	0.475	(0.207)
Lagged Female Share of the Labor Force	0.249	(0.139)	0.365 *	(0.156)	0.526 *	(0.156)	0.387 *	(0.152)
Time	0.049	(0.096)	-0.013	(0.104)	-0.036	(0.098)	-0.019 *	(0.100)
Intercept	22.302 ***	(5.762)	17.174 *	(6.256)	6.547	(7.178)	15.155 *	(6.114)
Random Effects								
Lagged Employment in Services	0.564 *	(0.800)	0.558 **	(0.135)	0.543 **	(0.803)	0.555 **	(0.803)
Lagged Female Average Years of School	1.586	(0.756)	1.787 **	(0.724)	1.573	(0.760)	2.166 *	(0.731)
Lagged Real GDP	0.684 ***	(0.184)	0.684 ***	(0.184)	0.720 ***	(0.170)	0.683 ***	(0.180)
Lagged Unemployment Rate	0.259 ***	(0.791)	0.295 **	(0.106)	0.256 ***	(0.797)	0.283 ***	(0.795)
Lagged Left Cab and Corp Scale	0.560	(0.665)	2.370	(1.510)	0.506	(0.685)	0.559	(0.678)
Lagged Cumulative Females in Parliament	0.645	(0.674)	1.241 ***	(0.376)	0.659	(0.678)	0.714	(0.640)
Lagged Individual Taxation	3.680 ***	(0.796)	1.076	(0.588)	3.589 ***	(0.803)	2.776 ***	(0.784)
Lagged Public Sector Employment	1.252	(0.676)	0.674 **	(0.217)	1.398	(0.709)	1.388	(0.691)
Lagged Female Share of the Labor Force	0.698	(0.705)	0.499 ***	(0.127)	0.618	(0.700)	0.572	(0.664)
Time	0.435 ***	(0.778)	0.375 ***	(0.123)	0.437 ***	(0.783)	0.523 **	(0.789)
Intercept	18.047 ***	(0.760)	15.752 ***	(6.390)	18.047 ***	(0.770)	15.690 ***	(0.750)
Serial Correlation and Residual Variation:								
Rho	0.989 ***	(0.005)	0.992 ***	(0.004)	--	--	--	--
Gamma	--	--	0.991 ***	(0.005)	--	--	--	--
Measurement Error	--	--	--	--	2.517 ***	(0.444)	103.640	(88.387)
Temporal Function	--	--	--	--	3.537 ***	(0.301)	178.800	(157.100)
Residual	1.195 ***	(0.267)	0.795 ***	(0.967)	0.588 ***	(0.051)	0.177	(0.069)
Proportion of Variance Explained	91.15%		94.11%		95.64%		98.69%	
N	666		666		666		666	
Countries	14		14		14		14	
-2 Log-Likelihood	-1136.85		-1134.70		-1148.10		-1134.50	
Fixed Effect Parms	11		11		11		11	
Random/Serial/Residual Parms	13		14		14		14	
AIC	2283.70		2281.40		2316.20		2285.00	
BIC	2286.90		2285.20		2322.60		2290.10	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

even non-significant in other countries; for random effects in which the fixed effect is not statistically different from zero, the significant random effect indicates that in some countries, the effect of the variable increases rates of female labor force participation, and in others it reduces rates of female labor force participation.

The third step in the model building process is to select a residual covariance structure, or the covariance matrix for the error component. In this step (Table 4.9), I

consider four alternative residual covariance structures, although it is important to note that I am only interested in accounting for the type of serial correlation the exists in the data, rather than being interested in the serial correlation function *per se* (Verbeke and Molenbergs 2000). The first serial correlation structure I consider is a simple first order autoregressive (AR1) structure in which the residual covariance in a given year is assumed to only be influenced by the residual covariance in the previous year plus white noise. The second serial correlation structure I consider is first order autoregressive moving average (ARMA 1,1) structure in which the residual covariance in a given year is assumed to only be influenced by the residual covariance in the previous year (AR1) plus white noise from a given year and the white noise from the previous year (MA1).

The third serial correlation structure I consider is a Gaussian serial correlation structure which decomposes the error into a serial correlation portion that is assumed to follow a Gaussian distribution and a measurement error portion. The fourth serial correlation structure I consider is similar, but assumes that the serial correlation structure follows an exponential distribution. Although less clear cut, the ARMA serial correlation structure is the best fit to the data and is the structure I use in the next step to produce the final "base model". The fourth step involves going back and making sure that the preliminary random effects structure is needed in the model as originally specified (Verbeke and Molenbergs 2000). I do not demonstrate this step for this dependent variable because I determine that the preliminary random effects structure is needed in the model as specified in the third step.

Table 4.10: Final "Base" Mixed Model Results Estimating Women's Labor Force Participation Rates

Variable	Estimate		S.E.
Fixed Effects			
Lagged Employment in Services	0.293	***	(0.054)
Lagged Female Average Years of School	-0.578		(0.349)
Lagged Real GDP	0.493	*	(0.188)
Lagged Unemployment Rate	0.076		(0.042)
Lagged Left Cab and Corp Scale	-0.352		(0.384)
Lagged Cumulative Females in Parliament	0.267		(0.332)
Lagged Individual Taxation	-0.023		(0.193)
Lagged Public Sector Employment	0.430	*	(0.209)
Lagged Female Share of the Labor Force	0.365	*	(0.156)
Time	-0.013		(0.104)
Intercept	17.174	*	(6.256)
Random Effects			
Lagged Employment in Services	0.558	**	(0.135)
Lagged Female Average Years of School	1.787	**	(0.724)
Lagged Real GDP	0.684	***	(0.184)
Lagged Unemployment Rate	0.295	**	(0.106)
Lagged Left Cab and Corp Scale	2.370		(1.510)
Lagged Cumulative Females in Parliament	1.241	***	(0.376)
Lagged Individual Taxation	1.076		(0.588)
Lagged Public Sector Employment	0.674	**	(0.217)
Lagged Female Share of the Labor Force	0.499	***	(0.127)
Time	0.375	***	(0.123)
Intercept	15.752	***	(6.390)
Serial Correlation and Residual Variation:			
Rho	0.992	***	(0.004)
Gamma	0.991	***	(0.005)
Residual	0.795	***	(0.967)
Proportion of Variance Explained	94.11%		
N	666		
Countries	14		
-2 Log-Likelihood	-1134.70		
Fixed Effect Parms	11		
Random/Serial/Residual Parms	14		
AIC	2281.40		
BIC	2285.20		

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

The resulting "base model" for female labor force participation rate is reported in Table 4.10. Looking first at the fixed effects portion of the model, which can be interpreted in the same manner as regression coefficients, lagged employment in services is significant and positively related to rates of female labor force participation, such that each percentage point increase in employment in services yields about a third of a percentage point increase in female labor force participation. Lagged real GDP, public sector employment, and female share of the labor force are all also positively and significantly associated with women's labor force participation rates. I interpret these findings to indicate that the increase in women's labor force participation is more closely associated with increasing levels of public or private sector employment in services than other welfare state policies and practices.

Turning to the random effects portion of the model[32], the average country-specific deviations from the overall fixed effect mean are presented in Table 4.10, while the best linear unbiased prediction (BLUPs)[33] of the country specific deviations and the standard error of these predictions are presented in Table 4.11. When the fixed effect and the country specific BLUP is significant, the BLUP is the estimate of the deviation from the fixed effect for that country. When the fixed effect is significant and the country specific BLUP is not significant, there is not significant random effect; thus, the estimated fixed effect is the effect for that country. For example, each percentage point increase in

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[32] Random effects and other variance components are reported as standard deviations. While it is generally standard practice to report these effects as variances, I believe that standard deviations are easier to interpret than variances. In any case, it is easy to transform the standard deviations to variances and vice versa, so this decision is one of convenience.

[33] I would prefer to label these the best linear unbiased estimate (BLUEs), but BLUE is generally used to refer to the best linear unbiased estimate of fixed effects, while BLUP is used to refer to random effects. The distinction arises because it is conventional to talk about *estimating* fixed effects but *predicting* random effects, but the two terms are otherwise equivalent (Robinson 1991).

Table 4.11: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for Women's Labor Force Participation Rates

Country	Lagged Employment in Services Rate		Lagged Female Average Years of School		Lagged Real GDP		Lagged Unemployment Rate		Lagged Cumulative Females in Parliament		Lagged Public Sector Employment		Lagged Female Share of the Labor Force		Time		Intercept	
	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.
Austria	0.449	(0.260)	-0.767	(0.950)	-0.407	(0.368)	0.170	(0.249)	0.451	(0.617)	-0.166	(0.475)	-0.152	(0.286)	-0.033	(0.213)	5.417	(10.595)
Belgium	-0.258	(0.374)	0.088	(1.083)	-0.079	(0.388)	-0.004	(0.152)	0.696	(0.514)	-0.305	(0.487)	0.007	(0.260)	0.079	(0.200)	4.898	(11.598)
Canada	1.265 ***	(0.249)	-3.632 ***	(1.053)	1.648 ***	(0.306)	0.690 ***	(0.180)	-0.390	(0.701)	0.968 *	(0.367)	-0.640 *	(0.293)	-0.723 **	(0.217)	-33.110 ***	(9.659)
Denmark	-0.052	(0.228)	2.912 **	(1.186)	0.056	(0.349)	0.203	(0.129)	-2.100 **	(0.649)	0.662 *	(0.286)	-0.866 ***	(0.161)	0.529 *	(0.239)	18.807 *	(9.749)
Finland	-0.837 **	(0.284)	-1.420	(0.904)	0.669 **	(0.327)	0.089	(0.136)	0.584	(0.658)	0.419	(0.411)	0.659 *	(0.283)	-0.321	(0.225)	1.856	(11.117)
France	-0.192	(0.229)	1.031	(1.215)	0.559	(0.354)	-0.142	(0.191)	0.766	(0.821)	-0.589	(0.469)	-0.294	(0.333)	-0.181	(0.217)	12.145	(10.844)
West Germany	-0.141	(0.338)	1.265	(1.054)	-0.404	(0.404)	-0.259	(0.183)	1.115	(0.635)	-0.052	(0.537)	-0.093	(0.281)	0.131	(0.210)	-0.647	(10.622)
Ireland	-0.538	(0.321)	1.131	(1.036)	-0.059	(0.288)	-0.209	(0.140)	0.500	(1.023)	-0.678	(0.464)	0.377	(0.236)	0.018	(0.162)	4.392	(7.977)
Italy	0.155	(0.301)	0.594	(1.158)	-0.342	(0.357)	-0.186	(0.133)	-0.084	(0.809)	-0.307	(0.559)	0.345	(0.260)	-0.067	(0.199)	-3.656	(8.284)
The Netherlands	-0.160	(0.241)	-0.577	(0.946)	-0.597	(0.342)	-0.280 *	(0.115)	0.886	(0.679)	-0.542	(0.504)	0.341	(0.230)	0.340	(0.232)	-2.966	(8.781)
Norway	0.281	(0.283)	-0.152	(0.854)	-0.368	(0.270)	0.009	(0.209)	-0.926	(0.580)	0.479	(0.394)	-0.308	(0.235)	0.276	(0.195)	8.249	(6.887)
Sweden	-0.119	(0.290)	-0.518	(0.801)	-0.182	(0.311)	-0.029	(0.185)	1.129	(0.651)	0.667 *	(0.345)	-0.022	(0.313)	-0.356	(0.223)	-1.502	(10.612)
UK	-0.218	(0.275)	-0.511	(1.238)	0.132	(0.418)	0.046	(0.148)	-1.249	(0.817)	-0.152	(0.258)	0.378	(0.337)	0.065	(0.191)	3.222	(11.464)
US	0.364	(0.256)	0.555	(0.850)	-0.626 *	(0.328)	-0.099	(0.191)	-1.378	(0.917)	-0.404	(0.401)	0.268	(0.330)	0.244	(0.204)	-17.106	(10.688)

Note: BLUPs are not show for the Left Cabinent/Corporatism Scale and Individual Taxation because the random effect is not significant.

 * $p < .05$, ** $p < .01$

lagged rate of employment in services has a larger impact (slope) on women's labor force participation rate in Canada, a smaller impact in Finland, and is otherwise the same for other countries in the sample. Similarly, real GDP has a larger impact on female labor force participation rates in Canada and Finland, and public sector employment has a larger impact in Canada, Denmark, and Sweden.

When the fixed effect of a variable is *not* significant and the country specific BLUP is significant, the BLUP is equivalent to the slope of the variable for that country. Obviously, when the fixed effect of a variable is *not* significant and the country specific BLUP is also *not* significant, that variable has no impact on the outcome. For example, lagged women's educational attainment reduces women's labor force participation rates in Canada, increases it in Denmark, and has no impact in other countries. Finally, when the BLUP of the random intercept is significant, it indicates that those countries differ significantly in their rates of female labor force participation, even when the variables in the model, the covariance structure of variables, and serial correlation are taken into account. Obviously, the fixed portion of the model does a relatively poor job of estimating women's labor force participating rates in Canada and Denmark.

Returning to Table 4.10 and turning specifically to the serial correlation and residual portion of the model, the large *rho* (autoregressive) and *gamma* (moving average) serial correlation values indicate that the residuals in any given year are strongly related to the residuals in the previous year. These large values make sense given the annual nature of the dataset and the institutional structure of women's labor force participation. The value of the residual is only interpretable relative to the overall variance in the null (intercept only) model. Therefore, I include a calculation of the

154

variance explained in the model, which is simply one minus the residual of the fitted model divided by the residual of the null model. Thus, this model explains a large portion of the variance over time, within countries in the null model.

The results of this model differ from previous research. While Pettit and Hooks (2005) find that service sector growth is not related to female labor force participation for married women or mothers, I find that employment in the service sector increases rates of female labor force participation. There could be a number of different reasons for this difference. First, I use different variables to measure the effect of the service sector. Second, I use annual longitudinal aggregate data, while Pettit and Hooks (2005) use cross-sectional multi-level data. Third, my dependent variable is different, with Pettit and Hooks estimating individual level labor force participation among married women and mothers, while I estimate its impact on aggregate rates of female labor force participation.

Notice also that the fixed effect for women's average years of schooling is never significant in any model, in direct contrast to the findings of Hicks and Kenworthy (2008). Moreover, models that only include employment in services yield nearly identical results, although adding women's average educational attainment does slightly improve the fit of each model. There are three possible reasons for this difference. First, Hicks and Kenworthy (2008) did not include employment in services in their models, which is clearly a much more important driver of female labor force participation. Second, I use annual data, while they use data on five year intervals. Third, the serial

Table 4.12: Model Building and Selection for Mixed Models Estimating Women's Employment Outcomes for Age-Grade Rates of Female Labor Force Participation

	Panel A: Ages 15-24					Panel B: Ages 25-34				
	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Preliminary Mean Structure:										
Preliminary Mean Structure	-2065.12	11	1	4154.25	4206.85	-1840.78	12	1	3707.55	3764.54
Preliminary Random Effects Structure:										
Random Intercept	-1700.38	11	2	3426.76	3483.75	-1676.22	12	2	3380.44	3441.81
Random Intercept, Random Time Coefficient, VC	-1549.05	11	3	3126.11	3187.48	-1464.32	12	4	2960.63	3030.77
Random Intercept, Coefficients, Variance Components (VC)	**-1331.76**	**11**	**12**	**2709.51**	**2810.33**	**-1286.96**	**12**	**13**	**2621.91**	**2727.12**
Random Intercept, Coefficients, Exchangeable Variance	-1397.52	11	3	2823.03	2884.40	-1373.35	12	3	2776.71	2842.46
Residual Covariance (Serial Correlation) Structure										
First-Order Autoregressive (AR1)	**-1137.85**	**11**	**13**	**2289.70**	**2294.20**	-1124.10	12	14	2256.20	2258.70
First-Order Autoregressive Moving Average (ARMA)	-1137.60	11	14	2291.20	2296.30	**-1123.90**	**12**	**15**	**2255.80**	**2258.30**
Temporal Gaussian with Measurement Error	-1155.35	11	14	2332.70	2339.70	-1127.45	12	15	2272.90	2278.60
Model Reduction:										
Random Intercept, Coefficients, VC, Residual	-1137.85	11	13	2289.70	2294.20	-1123.90	12	15	2255.80	2258.30
Random Intercept, Random Time Coefficient, VC, Residual	-1143.15	11	4	2292.30	2294.30	-1124.55	12	6	2254.00	2260.20
Random Intercept, VC, Residual	-1143.85	11	3	2291.70	2293.00	-1124.70	12	4	2254.20	2259.10
Stationary Residual Process	**-1143.85**	**11**	**2**	**2290.90**	**2292.10**	**-1124.05**	**12**	**3**	**2254.10**	**2256.10**

	Panel C: Ages 35-44					Panel D: Ages 45-54				
	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Preliminary Mean Structure:										
Preliminary Mean Structure	-1814.18	12	1	3654.35	3711.34	-2000.03	11	1	4024.05	4076.65
Preliminary Random Effects Structure:										
Random Intercept	-1677.33	12	2	3382.67	3444.04	-1710.44	11	2	3446.88	3503.87
Random Intercept, Random Time Coefficient, VC	-1357.82	12	4	2747.64	2817.78	-1410.59	11	4	2851.19	2916.94
Random Intercept, Coefficients, Variance Components (VC)	**-1189.37**	**12**	**13**	**2428.75**	**2538.34**	**-1261.02**	**11**	**12**	**2568.04**	**2668.86**
Random Intercept, Coefficients, Exchangeable Variance	-1265.25	12	3	2560.50	2626.25	-1299.49	11	3	2626.97	2688.34
Residual Covariance (Serial Correlation) Structure										
First-Order Autoregressive (AR1)	**-1055.40**	**12**	**14**	**2122.80**	**2126.70**	**-1171.70**	**10**	**13**	**2351.40**	**2353.90**
First-Order Autoregressive Moving Average (ARMA)	-1054.55	12	15	2123.10	2127.60	-1171.65	10	14	2353.30	2356.50
Temporal Gaussian with Measurement Error	-1083.35	12	15	2186.70	2193.10	-1191.45	10	14	2404.90	2411.90
Model Reduction:										
Random Intercept, Coefficients, VC, Residual	-1055.40	12	14	2122.80	2126.70	-1171.70	10	13	2351.40	2353.90
Random Intercept, Random Time Coefficient, VC, Residual	**-1056.85**	**12**	**5**	**2119.70**	**2121.60**	**-1172.40**	**10**	**4**	**2350.80**	**2352.70**
Random Intercept, VC, Residual	-1060.75	12	3	2125.50	2128.80	-1172.60	10	3	2349.10	2352.30
Stationary Residual Process	-1060.50	12	2	2125.50	2126.80	-1172.55	10	2	2349.10	2350.30

Note: Smaller values of AIC and BIC indicate a better fitting model; models in bold are the selected models at each step. The maximum likelihood (ML) estimation method is used to in the mean structure step, while the residual maximum likelihood (REML) estimation is used in the estimation of the random effects, residual covariance, and model reduction steps. Among other differences, the REML method does not use the fixed effects parameters in the calculation of the fit statistics, while the ML method does (Verbeke and Molenbergs 2000).

correlation structure was not specified in Hicks and Kenworthy's (2008) regression models, instead, they used fixed effect regressions and the clustered robust estimator to adjust standard errors. The finding that women's average years of schooling does not influence women's labor force participation rates is consistent with Stryker, Eliason, Hamilton, and Tranby (2010).

Next, I consider the impact of the labor market, the political context, and welfare state policies and activities on age-graded rates of female labor force participation. I

show these here mostly to establish "base models" for each of these variables, which become more relevant in the final chapter of the dissertation. The model fit process for these variables is summarized in Table 4.12. For all models, the variance components model with the full set of random coefficients is the best fit to the data in the second step. The best fitting residual covariance structure is the AR1 structure for participation rates for women ages 15-24, 35-44, and 45-54 and the ARMA structure for participation rates for women ages 25-34[34]. The model reduction steps leads to similar base models. The best fitting model for rates for women ages 15-24 and 25-34 is a model with a stationary residual process with no random effects; for women ages 35-44 and 45-54, the model with a random intercept and a random time coefficient but no other random effects is the best fitting model to the data.

The final "base" model results for age-graded rates of female labor force participation are presented in Table 4.13. The fixed effects are similar to those found in the model for aggregate rates of female labor force participation. In particular, for women ages 15-24, lagged employment in services rate increases labor force participation rates for the age group and the magnitude is 30% larger than for aggregate rates (.416 vs. .293). There is a similar finding for real GDP. For women ages 25-34, employment in services continues to be a significant and positive predictor for labor force participation, although the magnitude is smaller than it is for the younger age group. Other significant variables are the lagged real GDP and the unemployment rate, which are positively associated with labor force participation rates for this age group. For

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[34] The temporal exponential residual covariance structure does not converge for any of these models, so model fit statistics are not shown here.

Table 4.13:Base Mixed Model Results Estimating Age-Graded Women's Labor Force Participation Rates

Variable	Ages 15-24		Ages 25-34		Ages 35-44		Ages 45-54	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects								
Lagged Employment in Services	0.416 **	(0.138)	0.270 ***	(0.066)	0.194 *	(0.098)	0.195 *	(0.093)
Lagged Female Average Years of School	0.110	(0.708)	0.453	(0.754)	0.121	(0.664)	-0.824	(0.699)
Lagged Real GDP	0.695 ***	(0.183)	0.320 **	(0.098)	0.171 *	(0.085)	0.022	(0.127)
Lagged Unemployment Rate	-0.035	(0.040)	0.106 *	(0.051)	-0.087	(0.050)	-0.045	(0.036)
Lagged Left Cab and Corp Scale	-2.337	(1.518)	0.808	(0.996)	0.926	(0.686)	-1.024	(0.582)
Lagged Cumulative Females in Parliament	0.452	(0.357)	-0.306	(0.384)	-0.239	(0.468)	0.477	(0.409)
Lagged Individual Taxation	0.274	(0.607)	0.181	(0.460)	0.628	(0.453)	1.028	(0.930)
Lagged Public Sector Employment	0.317	(0.266)	-0.128	(0.328)	0.191	(0.253)	0.211	(0.230)
Lagged Female Share of the Labor Force	-0.250	(0.142)	0.211	(0.192)	0.101	(0.260)	0.068	(0.206)
Time	-0.707 ***	(0.118)	0.897 ***	(0.233)	0.992 ***	(0.181)	0.715 ***	(0.135)
Time Squared	--	--	-0.100 **	(0.031)	-0.066 *	(0.027)	--	--
Intercept	42.461 ***	(7.749)	25.286 **	(8.297)	34.168 **	(10.048)	29.968 **	(9.410)
Random Effects								
Time	--	--	--	--	0.475 **	(0.132)	0.606 **	(0.146)
Time Squared	--	--	--	--	0.002 *	(0.001)	--	--
Intercept	--	--	--	--	31.108 ***	-8.168	17.680 ***	(7.438)
Serial Correlation and Residual Variation:								
Rho	0.991 ***	(0.003)	0.991 ***	(0.004)	0.996 ***	(0.002)	0.995 ***	(0.002)
Gamma	--	--	0.992 ***	(0.003)	--	--	--	--
Residual	3.926 ***	(0.117)	3.824 ***	(0.114)	1.940 ***	(0.114)	2.151 ***	(5.114)
Proportion of Variance Explained	67.09%		77.59%		90.33%		90.07%	
N	592		592		592		592	
Countries	14		14		14		14	
-2 Log-Likelihood	-1143.85		-1124.05		-1056.85		-1172.40	
Fixed Effect Parms	11		12		12		10	
Random/Serial/Residual Parms	2		3		5		4	
AIC	2290.90		2254.10		2119.70		2350.80	
BIC	2292.10		2256.10		2121.60		2352.70	

Note: Estimation method is REML

* p < .05, ** p < .01, *** p < .001

women ages 35-44, lagged employment in services and real GDP are again significantly and positively associated with labor force participation rates, although these effects again shrink in magnitude. There are significant random effects for the time measures and the intercept, indicating substantial variability in slopes across countries on these variables. For women ages 45-54, the only significant substantive fixed effect predictor is employment in services. Again, there are significant random effects for the time measure and the intercept.

There are two important things to consider when interpreting the results of these models. First, there is missing data for the early part of the period of study for five

countries on these dependent variables[35]. Second, as described above, the impacts of

employment in services are concentrated among younger women. However, it may also

be the case that the effects of age and period are confused or overlapping in this analysis,

such that the positive impact on rates for younger women may due to the fact the younger

women are more likely to work in the service sector, *or* that there is more opportunity in

the service sector for younger women because this sector has expanded over time across

countries, *or* both. The fact that I account for time in the model as well as the

relationship of the errors across time partially supports the first explanation, but there is

no way to be certain from these analyses.

4.5.2 Part-Time Employment Using Mixed Models

As described above, an important feature of women's employment outcomes is

the prevalence of part-time work among women. The majority of variation in part-time

employment rates (81%), women's concentration in part-time employment (82%), and

share of involuntary part-time employment (73%) is between countries (See Appendix

14).

The model fit process for the three dependent variables capturing aspects of part-

time employment are summarized in Table 4.14[36], while the final "base" model results

these variables is presented in Table 4.15. The most important thing to note for the

model fit table is that the models for female rate of part-time employment and female

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[35] These countries are Austria (missing data from before 1988), Belgium (1975), Canada (1966), Denmark
(1975), and the United Kingdom (1975).
[36] The temporal exponential residual covariance structure does not converge for female share of involuntary
part-time employment, so model fit statistics are not shown here.

Table 4.14: Model Building and Selection for Mixed Models Estimating Women's Employment Outcomes for Base Models

	Panel A: Female Labor Force Participation Rates					Panel B: Female Part-Time Employment Rate					Panel C: Female Share of Part-Time Employment				
	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Preliminary Mean Structure:															
Preliminary Mean Structure	-1895.89	11	1	3815.78	3869.80	-1705.79	13	1	3439.58	3498.55	-1486.56	12	1	2999.12	3053.89
Preliminary Random Effects Structure:															
Random Intercept	-1612.64	11	2	3251.29	3309.80	-1378.29	13	2	2786.59	2849.78	-1207.44	12	2	2442.89	2501.86
Random Intercept, Random Time Coefficient, VC	-1477.70	11	3	2983.40	3046.42	-1205.96	13	3	2443.92	2511.32	-965.80	12	4	1963.61	2031.01
Random Intercept, Coefficients, Variance Components (VC)	**-1263.76**	**11**	**12**	**2573.51**	**2677.04**	**-982.35**	**13**	**12**	**2014.71**	**2120.02**	**-931.56**	**12**	**13**	**1887.13**	**1937.68**
Random Intercept, Coefficients, Exchangeable Variance	-1300.70	11	3	2629.40	2692.41	-1062.02	13	3	2156.05	2223.45	-976.98	12	3	1977.96	2028.51
Residual Covariance (Serial Correlation) Structure															
First-Order Autoregressive (AR1)	-1136.85	11	13	2283.70	2286.90	**-871.35**	**13**	**13**	**1760.70**	**1766.50**	**-827.55**	**12**	**14**	**1663.10**	**1665.70**
First-Order Autoregressive Moving Average (ARMA)	**-1134.70**	**11**	**14**	**2281.40**	**2285.20**	-871.35	13	14	1762.70	1769.00	-826.75	12	15	1663.50	1666.70
Temporal Gaussian with Measurement Error	-1148.10	11	14	2316.20	2322.60	-885.65	13	14	1797.30	1805.60	-836.75	12	15	1691.50	1697.30
Temporal Exponential with Measurement Error	-1134.50	11	14	2285.00	2290.10	-871.35	13	14	1762.70	1769.00	-827.25	12	15	1663.60	1671.70
Model Reduction:															
Random Intercept, Coefficients, VC, Residual	**-1134.70**	**11**	**14**	**2281.40**	**2285.20**	-871.35	13	13	1760.70	1766.50	-827.55	12	14	1663.10	1665.70
Random Intercept, Coefficients, VC, Residual, No Interactions	--	--	--	--	--	**-877.50**	**11**	**13**	**1771.00**	**1776.10**	--	--	--	--	--
Random Intercept, Random Time Coefficient, VC, Residual	-1140.40	11	5	2286.80	2288.80	-902.95	11	5	1811.90	1813.80	-828.50	12	5	1661.60	1664.30
Random Intercept, VC, Residual	-1139.90	11	4	2286.20	2287.90	-904.10	11	4	1812.10	1815.40	-828.35	12	3	1660.60	1663.80
Stationary Residual Process	-1140.05	11	3	2286.00	2288.20	-904.05	11	3	1812.10	1813.40	**-828.25**	**12**	**2**	**1660.50**	**1661.80**

	Panel D: Female Share of Involuntary Part-Time Employment					Panel E: Male-Female Wage Gap					Panel F: Occupational Gender Segregation (Ds)				
	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Preliminary Mean Structure:															
Preliminary Mean Structure	-980.94	14	1	1995.87	2059.77	-1291.23	12	1	2608.46	2661.88	-229.12	11	1	482.23	511.40
Preliminary Random Effects Structure:															
Random Intercept	-903.41	14	2	1842.83	1910.49	-1435.17	12	2	2896.35	2953.51	**-213.75**	**11**	**2**	**449.50**	**476.24**
Random Intercept, Random Time Coefficient, VC	-876.78	14	4	1793.56	1868.74	-870.41	12	3	1770.83	1832.46	-214.52	11	3	457.04	491.08
Random Intercept, Coefficients, Variance Components (VC)	**-846.06**	**14**	**13**	**1724.11**	**1784.26**	**-781.97**	**12**	**13**	**1613.93**	**1716.66**	-214.52	11	12	455.04	486.65
Random Intercept, Coefficients, Exchangeable Variance	-864.87	14	3	1761.75	1821.89	-852.43	12	3	1734.86	1796.50	-215.29	11	3	452.58	479.32
Residual Covariance (Serial Correlation) Structure															
First-Order Autoregressive (AR1)	-796.45	**14**	**14**	**1602.90**	**1606.10**	**-675.70**	**12**	**14**	**1355.40**	**1356.70**	**-214.05**	**11**	**3**	**434.10**	**436.10**
First-Order Autoregressive Moving Average (ARMA)	-796.45	14	15	1604.90	1608.80	-674.30	12	15	1356.60	1359.10	-213.10	11	4	434.20	436.80
Temporal Gaussian with Measurement Error	-800.60	14	15	1611.20	1614.40	-684.80	12	15	1389.60	1396.00	-214.50	11	4	435.00	437.00
Temporal Exponential with Measurement Error	--	--	--	--	--	-674.30	12	15	1356.70	1363.10	-214.50	11	4	435.00	437.00
Model Reduction:															
Random Intercept, Coefficients, VC, Residual	**-796.45**	**14**	**14**	**1602.90**	**1606.10**	-675.70	12	14	1355.40	1356.70	--	--	--	--	--
Random Intercept, Coefficients, VC, Residual, No Interactions	-802.60	12	14	1615.20	1618.40	--	--	--	--	--	--	--	--	--	--
Random Intercept, Random Time Coefficient, VC, Residual	-797.05	14	5	1600.20	1605.00	-674.70	12	4	1355.30	1358.70	--	--	--	--	--
Random Intercept, VC, Residual	**-797.05**	**14**	**3**	**1600.10**	**1602.00**	-675.20	12	3	1352.40	1353.70	**-214.05**	**11**	**3**	**434.10**	**436.10**
Stationary Residual Process	-798.40	14	2	1600.80	1602.10	**-665.70**	**12**	**2**	**1350.10**	**1352.40**	-220.50	11	2	445.00	446.30

Note: Smaller values of AIC and BIC indicate a better fitting model; models in bold are the selected models at each step. The maximum likelihood (ML) estimation method is used to in the mean structure step, while the residual maximum likelihood (REML) estimation is used in the estimation of the random effects, residual covariance, and model reduction steps. Among other differences, the REML method does not use the fixed effects parameters in the calculation of the fit statistics, while the ML method does (Verbeke and Molenbergs 2000). The term interactions refers to significant interactions found in the preliminary mean structure step, except in the case of the association index, in which it refers to variables dropped in the first step.

Variable	Female Part-Time Employment Rate		Female Share of Part-Time Employment		Female Share of Involuntary Part-Time Employment	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.187	(0.150)	0.181 *	(0.078)	0.642 *	(0.336)
Lagged Female Average Years of School	0.042	(0.559)	-0.175	(0.548)	0.787	(0.947)
Lagged Real GDP	-0.306 *	(0.140)	0.130	(0.100)	-1.007 ***	(0.261)
Lagged Unemployment Rate	-0.015	(0.044)	0.027	(0.058)	-0.076	(0.175)
Lagged Left Cab and Corp Scale	-0.682	(0.848)	-0.071	(0.931)	-4.929 *	(2.603)
Lagged Cumulative Females in Parliament	-0.859	(0.580)	-0.663	(0.369)	0.016	(0.637)
Lagged Individual Taxation	0.018	(0.386)	-0.071	(0.535)	2.680	(1.774)
Lagged Public Sector Employment	-0.795	(0.759)	0.276	(0.189)	0.544	(0.433)
Lagged Female Share of the Labor Force	0.071	(0.262)	-0.180	(0.168)	0.717 ***	(0.212)
Lagged Public Sector Employment * Soc. Dem. Regime	--	--	--	--	-1.033 **	(0.365)
Social Democratic Regime	--	--	--	--	30.644 *	(15.359)
Time	0.547 **	(0.181)	0.276	(0.182)	1.174 **	(0.443)
Time Squared	--	--	-0.056	(0.031)	-0.048	(0.075)
Intercept	24.367	(11.954)	77.174 ***	(5.190)	-12.879	(13.756)
Random Effects						
Lagged Employment in Services	0.127 *	(0.071)	--	--	--	--
Lagged Female Average Years of School	0.188	(1.077)	--	--	--	--
Lagged Real GDP	0.194	(0.178)	--	--	--	--
Lagged Unemployment Rate	0.013	(0.015)	--	--	--	--
Lagged Left Cab and Corp Scale	0.187	(0.629)	--	--	--	--
Lagged Cumulative Females in Parliament	0.804	(1.227)	--	--	--	--
Lagged Individual Taxation	1.957	(1.092)	--	--	--	--
Lagged Public Sector Employment	5.913 **	(2.696)	--	--	--	--
Lagged Female Share of the Labor Force	0.068	(0.116)	--	--	--	--
Time	0.045	(0.078)	--	--	--	--
Intercept	25.562 ***	(9.012)	--	--	37.655 *	(25.972)
Serial Correlation and Residual Variation:						
Rho	0.998 ***	(0.001)	0.991 ***	(0.003)	0.853 ***	(0.050)
Residual	1.140 ***	(0.043)	1.129 ***	(0.043)	2.313 ***	(0.228)
Proportion of Variance Explained	96.28%		86.30%		77.04%	
N	499		499		317	
Countries	14		14		14	
-2 Log-Likelihood	-877.50		-828.25		-797.05	
Fixed Effect Parms	11		12		14	
Random/Serial/Residual Parms	13		2		3	
AIC	1771.00		1660.50		1600.10	
BIC	1776.10		1661.80		1602.00	

Note: Estimation method is REML

* p < .05, ** p < .01, *** p < .001

share of involuntary part-time employment had significant interaction terms before the

serial correlation structure was accounted for. For the female part-time employment rate,

the interaction terms became non-significant once the serial correlation structure was

properly specified, likely because the serial correlation structure accounts for many inter-

country differences in this sample. Therefore, I dropped them in the model reduction step to facilitate interpretation of the main effects of the variables, even though it results in a reduction in model fit. For female share of involuntary part-time employment, the interaction term stayed significant even with the serial correlation structure being properly specified.

Turning first to the rate of part-time employment among women, the stationary AR1 process with all random coefficients is the best fitting model to the data. In the fixed effects portion of the model, increasing real GDP is associated with lower rates of part-time employment among women, while time has the inverse relationship. In the random effects portion of the model, lagged employment in services and public sector employment have significant random effects. The character of these random effects is described in Table 4.16, which includes BLUPs of the lagged employment in services rate and lagged public sector employment. As can be seen, increasing employment in services is associated with increased rates of part-time

Table 4.16: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for Female Part-Time Employment Rate

Country	Lagged Employment in Services Rate		Lagged Public Sector Employment	
	BLUP	S.E.	BLUP	S.E.
Austria	0.195	(0.225)	0.382	(1.038)
Belgium	-0.131	(0.260)	1.506	(1.218)
Canada	-0.210	(0.223)	0.885	(0.845)
Denmark	0.589 **	(0.197)	0.232	(0.865)
Finland	-0.072	(0.246)	0.503	(0.980)
France	-0.212	(0.230)	0.882	(1.260)
West Germany	0.107	(0.262)	-0.002	(1.335)
Ireland	0.241	(0.238)	-0.505	(0.990)
Italy	-0.056	(0.251)	-0.881	(1.455)
The Netherlands	0.217	(0.205)	-7.455 ***	(1.062)
Norway	-0.130	(0.234)	1.709	(0.903)
Sweden	-0.225	(0.217)	1.275	(0.812)
UK	-0.172	(0.220)	0.896	(0.876)
US	-0.140	(0.245)	0.573	(1.181)

* $p < .05$, ** $p < .01$, *** $p < .001$

162

employment among women in Denmark, while increasing public sector employment is associated with decreased part-time employment rates in the Netherlands. Turning to the serial correlation and residual portion of the model (Table 4.15), the large rho serial correlation values indicate that the residuals in any given year are strongly related to the residuals in the previous year. This model captures a large portion of the variance over time, within countries in the null model.

Turning next to the female share of part-time employment, the stationary AR(1) process with no random coefficients or intercepts is the best fitting model to the data. This indicates that countries differ relatively little in their share of women in part-time employment or the effect of the variables in the model once the proper serial correlation is taken into account. The only significant fixed effect in the model is for lagged employment in services, which is associated with a higher share of women in part-time employment.

For the female share of involuntary part-time employment, the random intercepts only model with a AR(1) process is the best fitting model to the data. This indicates that the intercepts vary across countries, but the slopes of the variables are similar across countries. Employment services and a larger female share of the labor force in the previous year are associated with higher shares of involuntary part-time employment. As real GDP increases, involuntary part-time employment among women decreases, likely because increasing GDP is correlated with expanding employment opportunities in all types of work. The left cabinet incumbency and corporatism scale is negatively associated with women's share of involuntary part-time employment among women, with

the highest score on the scale having a 5% lower share than the highest score on the scale. The interaction term between public sector employment and the social democratic regime type is significant. This indicates that higher levels of public sector employment in the social democratic regime type are associated with lower shares of involuntary part-time employment among women. This finding makes sense given the high quality of public sector jobs in these countries.

Turning to the serial correlation and residual portion of the model, (Table 4.15), the smaller-than-typical *rho* serial correlation values indicate that the residuals in any given year are not as strongly related to the residuals in the previous year. This model is also not as good at explaining the over time, within country, variance as some of the other models.

4.5.3 The Male-Female Wage Gap and Occupational Gender Segregation Using Mixed Models

The Male-Female Wage Gap: The model fit process for this dependent variable is summarized in Table 4.14, while the final "base" model results these variables is presented in Table 4.17. 59% of variation in the male-female wage gap is between countries, while 30% of the variation is across time, within countries. The stationary AR1 process with no random coefficients or intercepts is the best fitting model to the data. This indicates that countries differ relatively little in their average male-female wage gap or the effect of the variables in the model, once the proper serial correlation is taken into account.

164

Table 4.17: Base Mixed Model Results Estimating the Male-Female Wage Gap

Variable	The Male-Female Wage Gap	
	Estimate	S.E.
Fixed Effects		
Lagged Employment in Services	0.107 **	(0.039)
Lagged Female Average Years of School	-0.254	(0.420)
Lagged Real GDP	0.059	(0.095)
Lagged Unemployment Rate	0.045	(0.034)
Lagged Left Cab and Corp Scale	-0.686 *	(0.345)
Lagged Cumulative Females in Parliament	0.004	(0.205)
Lagged Individual Taxation	-0.361	(0.379)
Lagged Public Sector Employment	-0.165 **	(0.058)
Lagged Female Share of the Labor Force	-0.196	(0.097)
Lagged Female PT Employment Rate	0.015 *	(0.043)
Time	-0.299 **	(0.100)
Intercept	38.326 ***	(4.985)
Serial Correlation and Residual Variation:		
Rho	0.989 ***	(0.004)
Residual	0.921 ***	(0.041)
Proportion of Variance Explained	88.59%	
N	450	
Countries	14	
-2 Log-Likelihood	-665.70	
Fixed Effect Parms	12	
Random/Serial/Residual Parms	2	
AIC	1350.10	
BIC	1352.40	

Note: Estimation method is REML
 * $p < .05$, ** $p < .01$, *** $p < .001$

Looking at the fixed effects portion of the model[37], employment in services increases the

male-female wage gap, such that a one percentage point increase in employment in

services increases the wage gap by a tenth of a percentage point. Thus, increasing

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[37] I include the proportion of women in part-time employment as an independent variable in this model to control for work hour differences between men and women.

employment in services among women is a clear driver of continued employment

inequality between men and women. Another driver of the male-female wage gap is

differential rates of part-time employment among women, with higher levels of part-time

employment among women increasing the male-female wage gap. The political context

of the welfare state is an important avenue for decreasing the male-female wage gap, with

the cumulative left cabinet incumbency and corporatism scale negatively related to the

male-female wage gap, which makes sense given the emphasis of social democratic

parties on equality and employment. Welfare states also reduce the male-female wage

gap through public employment, in which wage structures are generally compressed and

the wage gap is smaller.

     Occupational Gender Segregation: The model fit process for this dependent

variable is summarized in Table 4.14, while the final "base" model results for these

variables are presented in Table 4.18. In addition, Appendix 15 contains models

separately estimating each variable on the occupational gender segregation index, in

order to ensure that the findings from the multivariate models are robust. The results

from these models are consistent with the results reported in Table 4.18.

     In table 4.18, I estimate the Size Standardized Index of Dissimilarity, or D_s, and

compare it to a model of the association index, or A, to check for robustness. The results

of these models are substantively similar, so I use D_s in subsequent analysis of the impact

of family policies because it is available for 84 country-years, as opposed to 48 for A.

Turning to the fixed effects portion of the model, as expected, higher levels of

employment in services is associated with increasing levels of occupational gender

Variable	Size Standardized Index of Dissimilarity		Association index	
	Estimate	S.E.	Estimate	S.E.
Fixed Effects				
Lagged Employment in Services	0.223 *	(0.106)	0.192 *	(0.084)
Lagged Female Average Years of School	0.153	(0.602)	-0.319	(0.318)
Lagged Real GDP	0.168	(0.147)	-0.064	(0.123)
Lagged Unemployment Rate	0.148	(0.145)	0.033	(0.081)
Lagged Left Cab and Corp Scale	1.681	(1.227)	-0.390	(0.596)
Lagged Cumulative Females in Parliament	-0.141	(0.203)	0.106	(0.108)
Lagged Individual Taxation	-3.269 *	(1.279)	-1.563 **	(0.575)
Lagged Public Sector Employment	0.385 *	(0.171)	0.390 **	(0.094)
Lagged Female Share of the Labor Force	-0.642 ***	(0.135)	-0.496 ***	(0.079)
Time	-0.299 **	(0.107)	-0.063	(0.063)
Intercept	73.537 ***	(4.564)	9.453 ***	(2.286)
Random Effects				
Intercept	3.738 ***	(0.901)	0.889	(1.175)
Serial Correlation and Residual Variation:				
Rho	0.846 ***	(0.063)	0.937 ***	(0.074)
Residual	2.581 ***	(0.262)	1.391 ***	(0.643)
Proportion of Variance Explained	48.14%		25.79%	
N	84		48	
Countries	14		14	
-2 Log-Likelihood	-214.05		-87.20	
Fixed Effect Parms	11		11	
Random/Serial/Residual Parms	3		3	
AIC	434.10		180.40	
BIC	436.10		182.30	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

segregation, conforming to previous research that demonstrates that the expansion of the service sector reinforces both vertical and horizontal sex segregation. It is also important to note that, as expected, women's educational attainment is not related to occupational gender segregation. Individual taxation tends to decrease occupational gender

segregation, likely by increasing employment and work hours of women, although this analysis sheds no light on the exact process by which this works. Public sector employment is associated with higher levels of gender segregation, likely because the expansion of the public serve sector reinforces horizontal sex segregation.

4.6 Conclusion

This chapter focused on women's employment outcomes and demonstrated that these outcomes are influenced by both the labor market and the welfare state factors reviewed in the second chapter. I began the chapter by reviewing trends in women's employment inequality across the countries in my sample and over time, and I briefly reviewed the literature which has found that women's labor force participation positively affects families and the state. I then described how various welfare state and labor market processes are associated with these outcomes from a comparative perspective.

In the analytical portion of this chapter, I used linear mixed models to assess the role of labor markets and welfare states on various measures of women's employment inequality. These analyses revealed that, as predicted, the variable most consistently associated with women's employment outcomes is employment in services. In particular, increasing employment in services is associated with increasing rates of female labor force participation in nearly all countries. This effect is strongest for younger cohorts, but remains true for women of all ages. While employment in services has increased the demand for women's labor, it has also contributed to increased rates of women's employment inequality. In particular, a high level of employment in services is

associated with a larger share of women in part-time employment and in involuntary part-time employment, but is only associated with higher levels of part-time employment in Denmark. Increasing employment in services is also associated with both higher levels of the male-female wage gap and more occupational gender segregation. These findings fit well with my theoretical expectations developed earlier.

This chapter then looked at the other aspect of the labor market that is associated with women's employment outcomes: real GDP. Economic prosperity is related to increased rates of women's labor force participation, but lower rates of women's part-time employment and involuntary share of part-time employment. I interpreted this to mean that increasing GDP is correlated with expanding employment opportunities in all types of work, but particularly full-time work for women. However, this "rising tide" does not affect the male-female wage gap or occupational gender segregation.

My analyses in this chapter also found that the political context has no effect on women's labor force participation or part-time employment rates. However, higher levels of the cabinet incumbency and corporatism are associated with less involuntary part-time employment among women and a lower male-female wage gap. The welfare state can influence gender segregation through taxation policies, with individual taxation being associated with more gender integration.

The welfare state does, however, have direct influence on women's labor force participation rates through public sector employment levels. My analysis found that larger public sectors are associated with increased women's labor force participation rates, lower rates of involuntary part-time work, a lower male-female wage gap, but

higher rates of occupational gender segregation. This effect is strongest in Canada, Denmark, and Sweden. I concluded that this is because, although public sector jobs are clearly segregated by gender, this segregation is not associated with a pay differential between men and women due to the compressed nature of wages in the public sector.

This analysis also serves to establish base models for each dependent variable used in subsequent chapters. Many researchers and policy makers argue that welfare states have a vested interest in increasing women's labor force participation and bettering women's employment outcomes. However, the literature and evidence reviewed in this chapter demonstrated that women in many countries are still disadvantaged in labor market outcomes, although there are substantial variations across countries. One of the primary reasons for this disadvantage is the difficulty that many women face in balancing work and caring responsibilities.

One of the most important ways in which welfare states have attempted to help families balance work and care is through the enactment of family policies. While I have discussed women's employment outcomes across welfare states with little reference to family policies, these policies are strongly related to women's employment outcomes because they mediate the relationship between the market and family by allowing men and women to engage in, or opt out of, care-taking responsibilities without losing their labor market position and rewards. In the next chapter, I will detail the importance of these policies, show how they vary across welfare states, and describe the literature that assesses the impact of these policies on women's employment outcomes. In the

following chapter of this dissertation, I will directly examine the impact of these family

policies on women's employment outcomes.

Chapter 5: Family Policies and Women's Employment Inequality: A Review of the Literature

5.1 Introduction

As we have seen throughout the previous chapters, women's employment is strongly affected by the need to care for dependents. In particular, women are likely to face significant penalties, both in the short and long-term, for career interruptions related to the need to care for dependents. These penalties are wide-ranging, even impacting societal levels of gender inequality. We have seen, moreover, that these effects are influenced and mediated by institutional, cultural, and labor market contexts. I have further argued that welfare states are interested in ameliorating these negative effects, and in attaining greater rates of female labor force participation, for a variety of reasons. Family policies, or policies directed toward families, are one way in which welfare states have attempted to influence rates of female labor force participation.

Before continuing, it is important to establish what types of public policies can be defined as family policies. For the moment, I will define family policies as publicly provided or managed services, benefits, or transfers that are exclusively targeted to couples with children and/or single parents (Gauthier 1996). These policies include maternity leaves, parental leaves, childcare leaves, publicly-funded or subsidized childcare, child benefits and subsidies, family allowances and benefits, and marriage benefits and subsidies. Some scholars argue for a broader definition of family policy that includes a variety of other factors that influence families, including education policies, taxation, economic insecurity and risk, work regulations (especially those that focus on gender equality), public transport, immigration, and food safety. However, most studies

172

define family policy using the more narrow definition given above (Gauthier 2000; Dingeldey 2001; Gould and Baker 2002; Hobson, Olah, and Morrissens 2004; Lewis, Knijn, Martin, and Ostner 2008). Many scholars focus on an even tighter subset of these policies, particularly leaves, publicly-funded childcare, and, to a lesser extent, child benefits and subsidies, family allowances and benefits (*cf*. Eliason, Stryker, and Tranby 2008)

Theoretically, family policies work by redistributing the costs of having and raising children in order to make it easier for families to balance work demands and family needs (Glass and Estes 1997; England and Folbre 1999; Glass 2000). However, as we shall see, predicting the effect of family policies on women's employment is rarely this straightforward. In order to understand how family policies influence women's employment inequality, we first need to focus on the development of family policies. In particular, I argue that these policies developed for a variety of different reasons and were meant to serve different purposes. I focus specifically on describing the development and comparative differences of maternity/parental leaves, publicly funded childcare, and family allowances, support benefits, and tax credits in this section, because researchers have identified these policies as the most likely to directly influence women's employment.

In the final section of the chapter, I review the literature that empirically assesses the impact of family policies on women's employment inequality. While this is a relatively new literature, the weight of the evidence suggests that generous family policies increase the rates of female labor force participation, but these effects are highly

173

contingent on the institutional, cultural, and labor market contexts in which women make decisions about employment. I conclude this chapter by arguing that our knowledge in this area is still relatively preliminary, and there is a lot we do not yet understand – particularly about how family policies influence the quality of women's employment. In the next chapter, I conduct an empirical analysis of the effect of family policies on the women's employment outcomes described earlier.

5.2 The Development and Generosity of Family Policies in Comparative Perspective

In this section, I first detail the historical development of family policies in general, then describe in more detail the development of, and comparative differences in, maternity/parental leaves, childcare, and family allowances, support benefits, and tax credits separately. This is because researchers have identified these policies as the most likely to directly influence women's employment. This division is somewhat artificial because family policies influence families as a whole, but it works well for descriptive purposes.

5.2.1 Historical Development of Family Policies

According to Gauthier (1996), the development of family policies can be divided in three eras. The first, from the late 19th century to the eve of World War II, covers the early period of family policy development. The second, from the end of World War II to the late-1970's, is characterized by massive increases in family benefits across welfare states. The final period, from the late-1970's to the present, is characterized by demographic changes related to the family, including increasing rates of female labor

force participation, and welfare states adjustments to family policies in reaction to, and in support of, this trend.

The earliest family policies were developed in France in the late-19th century by private employers and consisted of supplements to wages which were given to married workers with children (Gauthier 1996). These early family wages were followed by the development of equalization funds which grouped together several employers to administer the bonuses so businesses could not discriminate against married workers. Finally, in 1939, France developed a unified system of family allowances and benefits, consisting of a series of cash benefits and measures meant to protect maternity and childhood (Gauthier 1996). These nationalized systems of family allowances and benefits proved to be popular and similar schemes developed in several countries across Europe in the late-19th and early to mid-20th century. However, other countries, particularly the United States, paid limited attention to family policy, instituting cash benefits mainly for widows and orphans (Gauthier 1996).

Scholars have identified a number of explanations for the development of, and variations in, these early family policies. Some argue that this early stage of family development can be viewed as a result of conflicts and debates between social and political groups with different ideologies and goals (Wennemo 1994; Montanari 2000; Orloff 2004). In particular, Wennemo (1994) argues that differences in family policies were largely driven by the existence of religiously based political parties and the political strength of women in a given country. Countries in which religious political parties dominated tended to place heavy emphasis on moral criteria and excluded certain

undesirable households, mainly single mothers, from receiving benefits. On the other

hand, countries in which women had greater political strength, such as Sweden, tended to

extend family support to the neediest groups, regardless of moral standing or desirability.

Montanari (2000) traces differences in this period to the strength of social

movements. In particular, several prominent political groups advocated for the institution

of family wages or allowances during this period in order to resolve the conflict between

the breadwinners' relatively low market wages and the need to support a family

(Montanari 2000). These family wage systems created, and were created by, assumptions

that a male breadwinner and a female care-giver are the proper gender roles. Thus,

family wage advocates, implicitly or explicitly, argued that women should be supported

in full-time caregiving. This is often referred to in the literature as maternalism, although

there are multiple and competing definitions of this term (Orloff 2004; 2005). Therefore,

countries that tended to be sympathetic to the idea that full-time motherhood was

preferable for the well-being of the child and the mother tended to favor family wage

systems that were paid to the male breadwinner (Gauthier 1996). Finally, in some

countries, particularly Sweden, France, and Belgium, family policies were driven by

declining fertility with a desire by policy makers to be pro-natalist (pro-birth) and other

economic considerations. Similarly, family policies in Nazi Germany and Fascist Italy

were driven primarily by eugenic and pro-natalist concerns (Gauthier 1996).

It is important not to view family policies during this period as coherent or

complete systems. Family policies during this period were relatively piecemeal and

benefits were limited (Gauthier 1996). Nevertheless, by the eve of World War II, more

than a dozen nations had adopted some kind of family benefit schemes. Moreover, these early policies played a major role in shaping policies in later periods.

The period following World War II until the late 1970's has been described as the 'golden age' of the welfare state (Gauthier 1996; Huber and Stephens 2001). This period was marked by a commitment of governments, especially in Europe, to repair the damages of war and give citizens a new sense of security and prosperity. This period marks the beginning of the expansion of basic social protections that characterize the modern welfare state, and family policies were no exception (Esping-Andersen 1991; Gauthier 1996; Huber and Stephens 2001). During this period, family policies can be characterized by the universality of support and the comprehensiveness of coverage across most nations (Gauthier 1996). Family policies expanded substantially across countries during this period, with a few exceptions, most notably, the United States. During this period, the emphasis on the family wage as a focus of policy waned, and these policies were largely replaced by generous, but flat-rate, marriage subsidies and child benefits (Montanari 2000).

While there was a common trend towards high levels of generosity during this period, there remained substantial differences across countries in the level of benefits. In addition, scholars have identified inter-country differences in the purposes that countries had for expanding these family policies. Primary among these factors were changing fertility rates and an emphasis on the traditional family and maternalism (Wennemo 1994; Gauthier 1996; Montanari 2000; Orloff 2004). During this period, there was almost a complete reversal of fertility from a major decline to a major baby boom in

nearly all countries in Europe. This reversal lead to a decline in the use of family policies to increase fertility, except in France and Japan, where family policies to this day reflect strong pro-natalist concerns (Wennemo 1994; Gauthier 1996). Another important factor was the renewed emphasis on maternalism and the traditional family, lead by social scientists in the United States and Britain. Family policies changed to reflect this new emphasis, focusing on the protection of the mother/child relationship through marriage subsidies and child benefits (Montanari 2000). These policy changes emphasized the central role of the family and the traditional male breadwinner/housewife family structure (Wennemo 1994; Gauthier 1996; Orloff 2004).

Not all countries embraced these new norms of maternalism. In particular, the Scandinavian countries used family policies as a vehicle to realize gender equality, rather than to support maternalist norms. As in many other policy and social areas, these countries were influenced by the strength of left parties and correspondingly high levels of women's political participation (Wennemo 1994; Gauthier 1996; Lambert 2008). Moreover, governments in these countries were particularly sympathetic to the demands of the women's movement, especially the part of the movement that emphasized equality in the labor market (Gauthier 1996). While the women's movement was present in many countries, governments lead by center-right or confessional parties were reluctant to change family policies to favor women's equality (Wennemo 1994). However, the U.K. responded to the women's movement by reorganizing support to families late in the period to favor the poorest families and direct benefits towards women (Wennemo 1994).

Although encouraging demographic changes, strengthening the traditional family, and realizing gender equality were the main purposes behind family policies during this period, scholars have identified other purposes behind the expansion of these policies. First, many governments, most prominently France, were interested in increasing the quality of life for children, particularly by decreasing poverty, but also by protecting the mother from work during pregnancy (Wennemo 1994; Gauthier 1996). Secondly, some governments, including the United Kingdom and Germany, used family policies to achieve economic goals, particularly avoiding inflationary increases in wages and prices (Gauthier 1996). Finally, employers may have pursued generous family policies, especially in centralized market economies and countries with strong corporatist institutions, in order to maintain a stable labor force and increases women's labor force participation (Lambert 2004).

As already alluded to, the main explanations for differences in family policy development during this period, and which purpose governments used for expanding these policies, involve the strength of political parties during this period. Particularly, left parties tended to emphasize gender equality and poverty reduction, while confessional parties tended to emphasize maternalism and the traditional family (Wennemo 1994; Montanari 2000; Wilensky 2002). Other important differences across countries include the level of women's political participation, the strength of the women's movement, and corporatism (Wennemo 1994; Lambert 2008).

The period from the late-1970's to the present has brought massive demographic and economic changes. During this period, family forms have changed substantially,

with a decrease in traditional family structures and birth rates, and increasing rates of divorce, births out of wedlock, long-parenthood, pre-marital cohabitation, delayed marriages, and dual-earner families (Gauthier 1996). Moreover, as we have already seen, this period has been marked by rapidly increasing female labor force participation (Esping-Andersen et. al. 2002). Finally, and again as we have already seen, the welfare state has faced significant fiscal pressure during this period, leading to retrenchment in some social programs and an emphasis on female labor force participation as a way for welfare states to achieve their economic and social goals (Huber and Stephens 2001; Esping-Andersen et. al. 2002; Myles and Quadagno 2002).

Welfare states have responded to these changes by reorienting systems of state support to, in some cases, better support these new family norms and structures. That welfare states have attempted to respond to these changing needs is evidenced by the degree to which family policies have been restructured and expanded over this period, especially when many other programs are facing significant retrenchment (Daly 1997; Daly and Lewis 2000; Henderson and White 2003). Moreover, several scholars have noted that once instituted, family policies are nearly impossible to reduce or abolish because of their popularity (Wennemo 1994; Gauthier 1996). While family policies, in general, have been expanded over this period, the expansion is focused around a select set of policies, notably parental leaves and childcare. Marriages subsidies and child benefits, on the other hand, have generally been reduced or restructured (Daly 1997). Parental leaves and childcare are seen as the policies that are most positively related to female

labor force participation, while marriage subsidies and child benefits are thought to discourage women's labor force participation (Gauthier 1996).

These general trends conceal strong inter-country differences in responses to the changing family. Here, I describe these inter-country differences using Esping-Andersens (1991) tripartite regime typology because it reflects how things are generally described in the literature, however, it is important to note that scholars have identified substantial intra-cluster differences in family policies (Gornick, Meyers, and Ross 1996; Stier, Lewin-Epstein and Braun 2001). Liberal and social-democratic countries have responded to these changes by moving away from maternalist politics and policies, and towards support for women's, and mother's, employment (Orloff 2004).

While ideologies in liberal countries have changed to support women's employment, the state has accepted little responsibility for supporting working families (Gauthier 1996; Orloff 2004). Rather, these countries tend to favor regulatory mechanisms that are supportive of women's employment combined with market-provided services to partially support mother's employment (Whitehouse 1992; Orloff 2004). Moreover, while liberal countries have traditionally supported the poorest families, means-test benefits have been cut in many countries and replaced with punitive policies, especially for single mothers (Gauthier 1996).

Governments in social democratic countries, on the other hand, have generally accepted responsibility for supporting working families. As we have seen, a primary mechanism through which social democratic governments have done this is through the expansion of public service employment, which both partially replaces familial care and

provides good quality jobs for women (Orloff 2004). Moreover, these countries have tended to increase the universality and generosity of family policies, particularly parental leave and publicly-funded childcare.

Governments in conservative-corporatist states have also tended to expand family policies, but to a much lesser extent than in social-democratic countries. Moreover, marriage subsidies and child benefits are still widely utilized in these countries, which are thought to discourage women's labor force participation (Montanari 2000). Because of the prominent role of confessional parties in these countries, dominant ideologies tend to support the traditional family (Gauthier 1994). Family policies generally reflect this ideology and are primarily used to maintain traditional family structures, with coverage and benefits being largely directed toward men in the labor force (Wennemo 1994).

The increasing role of the European Union in the affairs of its member nations with regard to social policy in general, and family policy in particular, should not be ignored (Ebbinghaus 1998). There has been a substantial effort to coordinate social policy across member nations, particularly in regulatory and family policies (Guerrina 2002; Hobson 2000; Randall 2000; Scharpf and Schmidt 2000; Hardy and Adnett 2002; Aybars 2007). However, the EU has mainly passed non-binding resolutions or set minimum standards or levels of policy that most nations had already surpassed (Hobson 2000; Hardy and Adnett 2002; Aybars 2007). Moreover, EU standard setting in family and gender policy has not resulted in substantial convergence, leading many scholars to conclude that differences in the institutional and ideological arrangements of nation-states

places limits on the extent to which the EU will result in convergence across nations (Randall 2000; Aybars 2007; Lewis et. al. 2008).

5.2.2 Parental Leaves

As previously described, parental leaves and publicly funded childcare have been the primary means through which policy makers have attempted to support working families, especially during the most recent period of family policy development. The majority of literature on family policies, especially that which is interested in the effects of family policy on women's employment outcomes, has focused on this limited set of policies. There are two reasons for this focus. First, these policies and services are fairly widespread, with most welfare states having at least limited leaves and publicly funded childcare. Secondly, these policies, theoretically at least, are explicitly associated with women's employment outcomes because they allow families to balance work and family obligations. Parental leaves, especially paid parental leaves, allow caretakers to care for dependents without sacrificing their connection to the labor force or suffering significant loss of wages. Publicly funded childcare allows women to maintain a constant connection to the labor force by relieving mothers of the responsibility for full-time care of children.

While the policy and scholarly focus on this relatively constrained set of policies "makes sense", there are at least two ways in which it is problematic. First, several scholars have argued that this research and policy 'lock-in' has lead policy-makers and researchers to ignore other policy strategies that may be equally as important to

understanding and helping women balance work and family responsibilities (Morgan 2004). Such policy options include flexible work arrangements, reduced work hours, longer vacations, longer 'daddy' leaves, paid sick time, paid vacation time, and working hours regulations to name a few (Rapoport et. al. 2001; Williams 2001; Gornick and Meyers 2003; Morgan 2004; Lewis et. al. 2008). Scholars who focus on these policy options tend to argue that the employment contract needs to be radically reworked to focus on the needs of families (Rapoport et. al. 2001; Williams 2001; Moen 2005).

Secondly, the focus on publicly funded and mandated programs leads comparative scholars to ignore family policy schemes in the United States. When viewed from a comparative perspective, the United States is a family policy laggard, having little publicly funded childcare and only a short, unpaid parental leave. However, such a perspective ignores the existence of state and employer-based programs, as well as the literature that discusses them (Kelly 2005). While these policies do not cover a large portion of the population and are generally only available to the professional and managerial classes, they are important for understanding family policies in the United States (Kelly and Dobbin 1999; Kelly 2003). Moreover, these scholars argue that the availability of these programs to a select upper class has helped to forestall effective political coalitions to demand public provision of these services (Kelly 2005). That being said, in this and the next two sub-sections, I focus on the development of publicly mandated parental leaves, publicly-funded childcare, and family allowances, support benefits, and tax credits largely because the balance of the literature focuses on these topics.

Parental leaves can be defined as an entitlement to claim time off in order to care for a dependent, usually a child. Parental leaves represent an important reorientation of the relationship between the state, the market, and the family because they serve the demands of reproduction rather than production (Leira 2002). Moreover, parental leaves establish the primacy of the parental obligation to care for dependents over employers demands for labor.

A variety of different types of leaves fall under the rubric of 'parental leaves'. While the four types of leaves I discuss here are broadly consistent with the majority of the literature, there is by no means complete agreement on their definitions. *Maternity leaves* are available only to the mother immediately before and after the birth of the child. In most countries, these leaves have been available longer than any other leave and have a generally high wage replacement rate. *Parental leaves* are leaves that can be taken immediately after the expiration of the maternity leave. These leaves are generally longer than the maternity leave, available to both parents, and are not as well compensated as the maternity leave. *Paternity leaves* are portions of the parental leave that are only available to the father and are meant to help fathers connect with their children and alter the distribution of care work in the family. These leaves are generally short in duration with high wage replacement rates, and are in place in Sweden, Norway, and a few other countries. The last category of leaves is *childcare leaves*, which will be addressed in the next section. It is important to realize that some countries combine all of these leaves into a single 'parental leave', while in others they are counted and reordered as separate and distinct leaves, making cross-national comparison somewhat difficult.

The first parental leaves developed in the mid-19th century were maternity leaves which allowed, or in some cases forced, women to take time off immediately before and after childbirth. Early maternity leaves primarily arose from concerns about the health of mothers and their children (Gauthier 1996). These leaves covered only certain categories of workers and were largely unpaid. The first paid leave was established in Germany in 1883, and all advanced industrialized countries, with the exceptions of Canada and the United States, had adopted paid leaves by the eve of the Second World War (Gauthier 1996). Gauthier (1996) argues that an important impetus for the expansion of maternity leaves came in 1919 with the adoption of the Maternity Protection Convention by the International Labor Organization. This convention included provisions for 12 weeks of maternity leave (6 weeks before and 6 weeks after confinement). This convention was followed by a significant upgrading of maternity leave schemes in most countries. Thus, by 1945, most countries offered some sort of maternity leave, however, more than half the countries provided women with only limited benefits (Gauthier 1996).

While the ideological orientations of many countries did not favor mothers' employment during the immediate post-war period, maternity leaves and benefits were expanded significantly during this period, largely because mothers were identified as a sub-group that deserved special protection and care (Gauthier 1996). The expansion of maternity benefits was again partly influenced by the adoption of an ILO convention that called for 14 weeks of maternity leave at full wage replacement.

Table 5.1: Select Information on Public Parental Leaves for 14 Welfare States, 1998-2005

Country	Duration of Maternity Leave in Weeks				Wage Replacement Rate (% of Wage)				Duration of Parental Leave in Weeks			
	1960	1982	2005	Change Over Period	1960	1982	2005	Change Over Period	1960	1982	2005	Change Over Period
Sweden	26	52	52	26	65%	83%	80%	15%	26	26	26	0
Norway	12	18	42	30	0%	100%	100%	100%	0	52	0	0
Italy	14	20	21	7	80%	80%	76%	-4%	26	26	26	0
Denmark	11	24	18	7	0%	90%	100%	100%	10	10	10	0
United Kingdom	18	18	18	0	0%	48%	46%	46%	0	40	26	26
Finland	6	17.5	17.5	12	0%	80%	66%	66%	0	26.3	26	26
Austria	12	16	16	4	100%	100%	100%	0%	0	0	0	0
France	14	16	16	2	67%	90%	100%	33%	88	88	156	68
The Netherlands	0	12	16	16	0%	100%	100%	100%	0	0	0	0
Belgium	14	14	15	1	60%	80%	76%	16%	0	0	0	0
Canada	0	15	15	15	0%	60%	55%	55%	0	0	20	20
Germany	12	14	14	2	75%	100%	100%	25%	0	18	148	148
Ireland	12	14	14	2	40%	70%	70%	30%	0	12	14	14
United States	0	0	12	12	0%	0%	0%	0%	0	0	0	0
Mean	11	18	20	10	35%	77%	76%	42%	11	21	32	22

Data Source: See Appendix 1

The expansion of parental leaves policies, at least from 1960, can be seen in table 5.1 and is represented graphically in Figure 5.1. In this figure, the length of maternity leave and parental leave are represented as percentage of a calendar year, the wage replacement rate is represented as a percentage of regular wages, and expenditure is represented as a percentage of annual GDP.

During this period, leave durations were extended and benefits were tied to wages, instead of flat-rate or lump-sum payments (Gauthier 1996). As maternity leaves expanded, they became a major component of state support for families. The most extensive reforms were made in the Scandinavian states, notably Sweden and Norway, which emerged as the leaders in the duration of maternity leaves by the end of the period. The U.S., Ireland, and Canada are the clear laggards in duration, wage replacement, and the availability of parental leave.

The period from the late-1970's to the present has brought further increases in maternity leave duration and wage replacement rates, however, the most important change has been the expansion of parental leaves that are available to both parents during this period, especially in the social democratic countries. There continue to be differences in parental leaves between countries, with the differences mirroring those that came earlier. Moreover, parental leaves in the more generous countries of Sweden and Norway tend to be partially individualized, in which one part of the leave is reserved for each parent and the remainder of the leave can be allocated how the parents see fit. These leaves are also highly flexible, so that leaves can be taken part-time and leave

Figure 5.1: Parental Leave Index Components
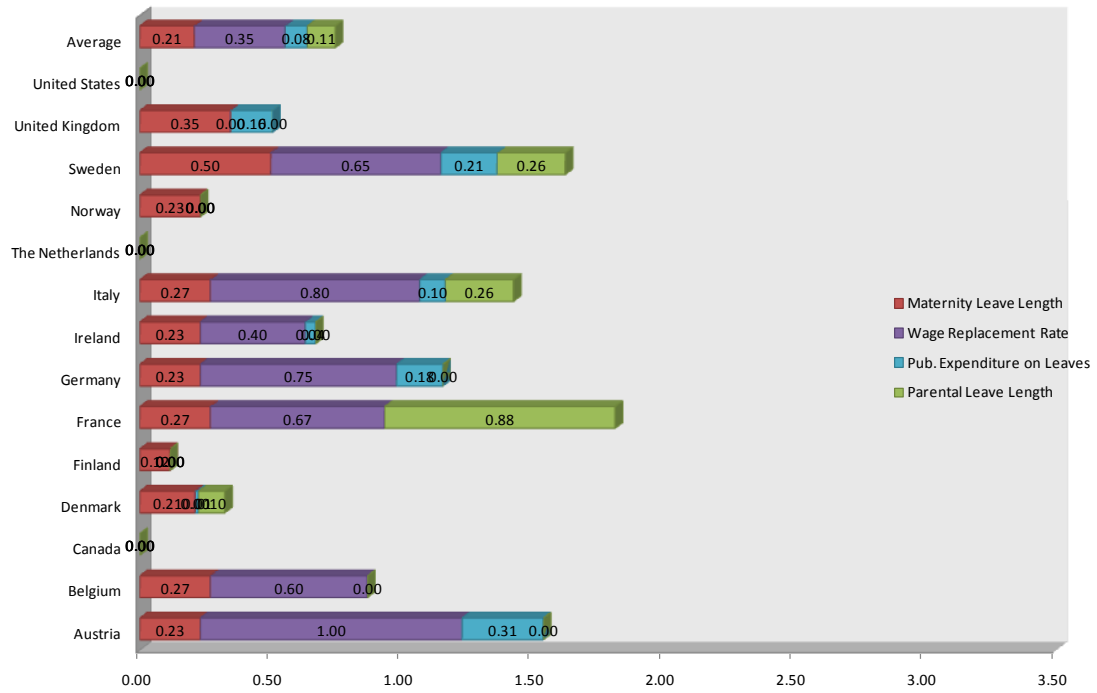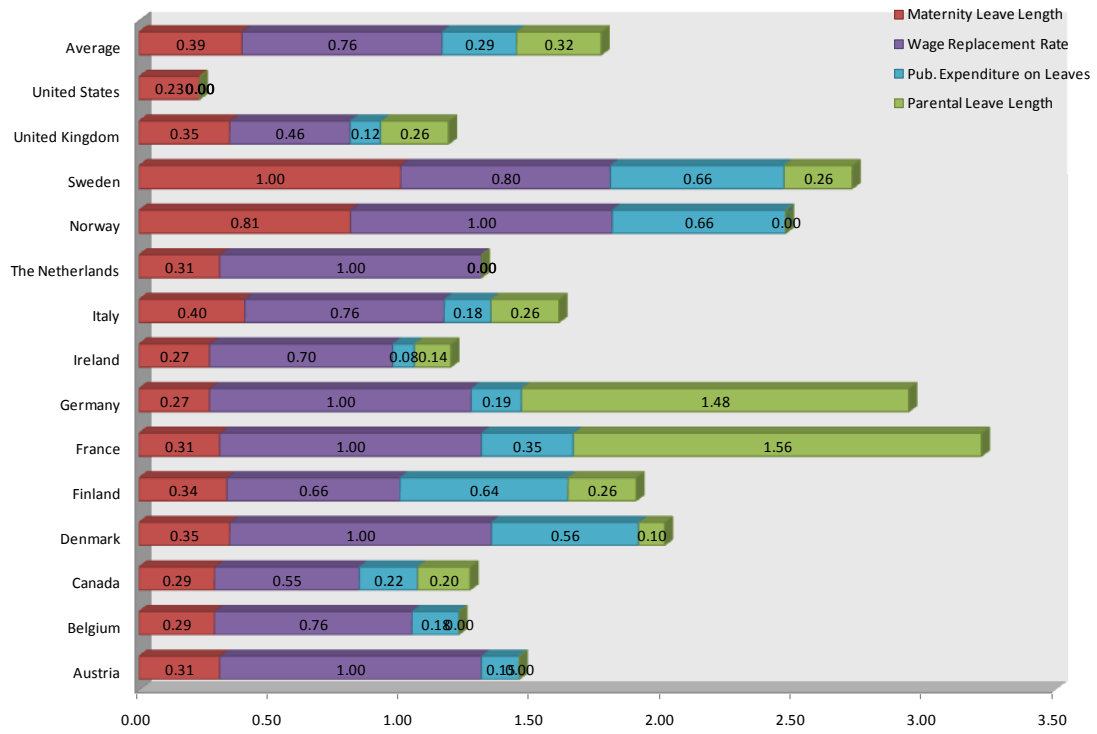
usage can be staggered over a number of years (Bruning and Plantega 1999). Parental and maternity leaves in other countries rarely have these features.

Scholars studying parental leaves in the most recent period of their development have been interested in the causes of variation in these policies across welfare states, inter-country and gender differences in take-up rates, and the impact of various lengths of leave on women's employment outcomes. Scholars studying the differences in parental leave development across countries have shown that left cabinet incumbency as well as female representation in government is an important determinant of the expansion of the parental leaves during this period (Ferrarini 2003). This expansion, and some convergence across countries, has been traced to the EU Parental Leave Directive adopted in 1996. This directive was the first agreement reached through the open method of coordination, and called for the provision of a minimum right to parental leave of three months for each parent to be taken in the first eight years of the child's life. The directive, however, did not set a minimum standard of remuneration, leading many scholars to argue that the directive does little to promote gender equality in labor force participation or leave take-up (Guerrina 2002).

While there are substantial difficulties in interpreting the available information on take-up rates due to data limitations, the data we do have suggests that there are substantial differences in parental leave usage across countries. The continental European and English speaking countries tend to have high take-up rates among women, but low take-up rates among men. That is, women use the vast majority of parental leaves in these countries, even if men are eligible to use them (Bruning and Plantega

1999). Moreover, mothers who use their leaves tend stay on leave for the majority of the leave duration (Moss and Deven 1999). Exceptions to this rule of high take-up rates are countries with strict eligibility requirements and/or short leaves such as Denmark, the Netherlands, and France, which have much lower take-up rates even among eligible mothers (Bruning and Plantega 1999).

The Scandinavian countries, however, are noted for having high take-up rates among both mothers and fathers. While mothers use the majority of the leave period, most fathers in the Scandinavian countries do use the short 'daddy' or paternity leaves to which they are entitled (Bruning and Plantega 1999; Moss and Deven 1999). These leaves are tremendously popular among researchers, policy makers, and the public in these countries because they have potential to help set new norms for what makes a 'good' father, and may signal a far reaching change in the way fathers and mothers negotiate employment and childcare (Leira 2002). These leaves, however, are still relatively short and only some fathers, particularly first-time fathers and the more educated, tend to use them (Sundstrom and Duvander 2002). Moreover, men's take-up is generally limited to these 'daddy' leaves, with most men not taking the additional months of the parental leave that is available to them (Leira 2002).

Finally, parental leave researchers have theorized about how various lengths of leaves will impact women's employment outcomes. Some researchers argue that relatively short leaves of less than six months have little impact on women's employment outcomes because they are so short that women are more likely to leave the labor market than use leaves, although there is almost no research to support this point (Moss and

Deven 1999). Leaves between six months and one year, on the other hand, are hypothesized to have a positive impact on women's employment outcomes because they allow women to claim time off in order to care for a new child without endangering a woman's labor market position (Ronsen and Sundstrom 2002; Misra, Buding, and Moller 2007). Finally, leaves longer than one year, especially those with low wage replacement rates, are believed to have negative effects on women's employment outcomes because they entail prolonged detachment from the labor market, making it difficult for women to be in or advance in the labor market in the long term (Ruhm and Teague 1995; Moss and Deven 1999; Leira 2002; Ronsen and Sundstrom 2002).

5.2.3 Childcare

Publicly-funded childcare is a vital issue for gender equality in employment outcomes because mothers are still disproportionately responsible for childcare (Randall 2000). While parental leaves serve the demands of reproduction, childcare provision allows parents to balance the reproduction and production roles by relieving mothers from the demands of full-time childcare, allowing women to maintain a constant connection to the labor force (Leira 2002). Thus, publicly funded childcare should, theoretically, increase women's labor force participation and decrease women's rates of and concentration in part-time employment, the male-female wage gap, and occupational gender segregation, especially when it is universally available.

Table 5.2: Select Information on Publicly Funded Childcare for 14 Welfare States, 1960-2005.

Country	Percentage of Children Ages 0 - 2 in Publicly Funded Childcare				Percentage of Children Ages 3 - School Age in Publicly Funded Childcare			
	1960	1982	2005	Change Over Period	1960	1982	2005	Change Over Period
Denmark	0.0%	37.0%	63.0%	63.0%	0.0%	70.0%	90.7%	90.7%
Sweden[a]	3.3%	52.6%	85.6%	82.3%	3.3%	52.6%	85.6%	82.3%
Norway	0.0%	N.A.	42.3%	42.3%	0.0%	N.A.	90.5%	90.5%
Belgium	6.1%	20.0%	41.7%	35.6%	89.1%	95.0%	99.8%	10.7%
Finland	0.0%	24.6%	26.3%	26.3%	0.0%	45.3%	67.8%	67.8%
The Netherlands	0.0%	1.0%	25.0%	25.0%	25.1%	44.7%	57.6%	32.5%
France	4.3%	16.3%	20.0%	15.7%	48.9%	90.9%	100.0%	51.1%
Austria	1.7%	3.8%	10.5%	8.8%	16.2%	56.2%	74.9%	58.7%
Italy	2.5%	4.5%	7.0%	4.5%	0.0%	82.1%	99.4%	99.4%
United States	0.0%	1.0%	6.0%	6.0%	28.3%	28.4%	58.4%	30.1%
Canada	0.0%	4.0%	5.0%	5.0%	0.0%	28.0%	56.8%	56.8%
Germany	0.3%	0.9%	5.0%	4.7%	23.8%	56.3%	79.3%	55.5%
United Kingdom	0.9%	1.7%	2.0%	1.1%	8.9%	38.0%	90.5%	81.6%
Ireland	N.A.	N.A.	0.0%	N.A.	0.0%	43.9%	49.4%	49.4%
Mean	1.5%	13.9%	24.2%	24.6%	17.4%	56.3%	78.6%	61.2%

a: Data for Sweden is combined for ages 0 to School Age
Data Source: See Appendix 1

The Scandinavian countries and Belgium come closest to this model, having high quality, publicly funded childcare with near universal coverage in most countries (Leira 2002; Michel and Mahon 2002). In particular, Sweden was the first welfare state in my sample to focus on the public provision of childcare. The motivations for this early establishment of publicly funded childcare were driven by worries around the declining birthrate, along with an interest in early childhood education (Gauthier 1996). However, as can be seen in table 5.2 and represented graphically in figure 5.2 (where coverage for children of various ages is represented as a percentage of all children in that age group), the real expansion in publicly funded childcare in these countries began in the mid- to late-1960's and was spurred by the entrance of increasing numbers of women into the labor force (Gauthier 1996; Leira 2002). In increasing publicly funded childcare provisions, the social democratic countries, again especially Sweden, were motivated both by the need to support working mothers in order to achieve gender equality, and by an interest in early childhood education, especially the educational value of early learning and socializing (Gauthier 1996; Mahon 2002).

Several countries came close to achieving universal coverage in publicly-funded childcare by the mid-2000's, including Denmark, Sweden, and Norway. In comparative perspective, these countries have high levels of coverage, with 63% of children ages 0 to 2 and 89% of children ages 3 to school age in publicly funded childcare. These countries are the only group of countries with such high levels of coverage for children ages 0 to 2. This age group is much more expensive to care for, needing higher staff-to-child ratios than older children, so such high levels of coverage demonstrates a marked concern for

194

Figure 5.2: Public Childcare Index Components

1960

Country	Coverage Children Ages 0-2	Coverage Children Ages 3-School Age	Pub. Expenditure on Childcare
Average	0.01	0.17	0.04
United States	0.00	0.28	0.00
United Kingdom	0.01	0.09	
Sweden	0.00	0.03	
Norway	0.00		
The Netherlands	0.00	0.25	0.27
Italy	0.00	0.02	
Ireland	0.00		
Germany	0.00	0.24	
France	0.04	0.49	
Finland	0.00		
Denmark	0.00		
Canada	0.00		
Belgium	0.06	0.89	
Austria	0.01	0.16	

2005

Country	Coverage Children Ages 0-2	Coverage Children Ages 3-School Age	Pub. Expenditure on Childcare
Average	0.21	0.79	0.77
United States	0.06	0.58	0.27
United Kingdom	0.02	0.91	0.81
Sweden	0.45	0.86	1.52
Norway	0.42	0.91	0.77
The Netherlands	0.25	0.58	1.01
Italy	0.07	0.99	0.61
Ireland	0.00	0.49	0.26
Germany	0.05	0.79	0.38
France	0.20	1.00	1.19
Finland	0.26	0.68	0.96
Denmark	0.63	0.91	1.64
Canada	0.05	0.57	0.16
Belgium	0.42	1.00	0.79
Austria	0.11	0.75	0.42

195

gender equality and women's employment outcomes, because they increase both supply

and demand for women's employment (Gauthier 1996). Furthermore, while there are

substantial local variations, childcare facilities tend be of high quality with relatively low

staff-child ratios and highly trained staff (Kroger 1997; Michel and Mahon 2002).

Childcare facilities also tend to be highly flexible in these countries, with many facilities

being drop-off centers that are open the majority of the day (Michel and Mahon 2002).

Near universal coverage and the high quality and flexibility of childcare facilities has

institutionalized a cultural expectation that parents should use publicly funded childcare

because it is what good parents do (Leira 2002).

In Denmark, Sweden, and Norway, childcare has taken on the status of an

entitlement or social right, and promotes both the mother's and father's employment

(Leira 2002). Thus, in these countries, publicly funded childcare promotes an equal

division of family and work responsibilities between fathers and mothers. It is important

to qualify this utopian world somewhat because research has found that there remain

substantial variations in access to childcare in social democratic countries, with

immigrants and the poor having less access to childcare than the middle class, largely due

to the substantial role of local governments in providing and managing childcare facilities

(Kroger 1997; Allen 2003).

Publicly financed childcare facilities developed much later in most of the

continental European countries with a different set of motivations. The development of

publicly financed childcare in these countries was driven largely by a belief in the value

of early education, as well as by population concerns (Gauthier 1996). This is most

evident in France, with its extensive system of preschools that were designed explicitly to educate children (Gauthier 1996). The emphasis on pre-primary education can be seen in Table 5.2 and Figure 5.2. While there is extensive coverage across Europe for children ages 3 to school age, there is only minimal coverage for children ages 0 to 2, although the situation is improving. The low provision of infant care is reflective of national ideologies that believe mothers, especially those with young children, should not work outside of the home (Gauthier 1996). There is substantial variation, however, across conservative countries in the coverage of care. For example, France and Belgium have substantial percentages of children ages 0-2 in publicly funded childcare and extensive, high quality, flexible childcare for children of all ages, due to an emphasis on child education and pronatalism (Gauthier 1996), while the Netherlands lags significantly in the percentage of children ages 3-5 in publicly funded childcare. Germany has high quality, but limited, infant care, and inflexible and incoherent childcare for older children, making it more difficult for women to use public funded childcare to balance work and family responsibilities (Kreyenfeld and Hank 2000).

Publicly funded childcare in the continental European countries tends to be of high-quality, but it is much less flexible than childcare in the Scandinavian countries. Childcare centers, largely located in primary schools or churches, tend to be open very limited and sometimes irregular hours. There are generally substantial regional variations in the childcare in these countries, particularly in Germany (Kreyenfeld and Hank 2000). Finally, there are almost no private childcare providers in many of these countries, because private firms simply cannot compete with subsidized providers. Therefore, from

a research perspective, the structure of, and motivation for, publicly funded childcare in conservative countries simply do not facilitate the employment of women (Gauthier 1996; Kreyenfeld and Hank 2000). While publicly funded childcare likely has some positive impact on helping women balance work and family demands, the majority of women in these countries either do not work when their children are young or rely on informal arrangements for childcare (Drobnic, Blossfeld, and Rohwer 1999; Kreyenfeld and Hank 2000).

Publicly funded childcare is generally limited in the U.S., U.K, Canada, and Ireland because these countries tend to view high quality childcare as outside of the government's responsibilities and presume that it should be provided by the market (Gauthier 1996). Thus, publicly funded childcare is provided through means tested benefits for the poor or through preprimary education. The majority of children in publicly funded childcare in these countries are in preschools or kindergarten as part of preprimary education (Gauthier 1996). Childcare is also provided for the some of the poor through means-tested benefits; however, the impact of these benefits in generally uneven and contradictory and they have seen increasingly stiff eligibility requirements in recent years (Michel and Mahon 2002). As a result, while these countries tend to have high rates of women's labor force participation, this participation is largely facilitated through private childcare providers of mixed quality, due to the low wages paid to private caregivers.

A relatively recent development in this area is the expansion of childcare leaves. Largely unknown until the late 1970's, childcare leaves are long, low paid or unpaid

leaves that are typically taken by the mother after the parental/maternity leave has run out (Morgan and Zippel 2003). As can be seen in table 5.3, many countries with these leaves have adopted some version of these policies. Childcare leaves were generally institutionalized by center-right governments as a way to promote parental choice in the care of children, fight unemployment by shrinking the labor force, and contain spending on childcare (Leira 2002; Morgan and Zippel 2003). These policies have been hotly contested and criticized, both among scholars and within the countries that have instituted them. Because these policies are almost always taken by the mother, the long and low-paid (or unpaid) nature of these leaves obviously raises concerns about gender equality in the caring and market roles, particularly the potential negative effects on mothers' labor market attainments in the long-term (Leira 2002; Morgan and Zippel 2003).

Moreover, because of the low pay associated with these policies, women in lower class positions are much more likely to take these leaves, raising concerns about class inequality (Mahon 2002). Finally, while these benefits were instituted to promote parental choice in childcare, they do not represent a choice at all without universal access to publicly funded childcare, as is often the case in countries that instituted these polices. Rather, they

Table 5.3: Information on Childcare Leaves for 14 Welfare States in 2005

Country	Duration (Weeks)	Paid
Austria	104	Paid
Sweden	78	Unpaid
Norway	52	Unpaid
Denmark	32	Paid
The Netherlands	26	Unpaid
France	24	Unpaid
Finland	18.5	Paid
Belgium	12	Paid
Canada	11	Paid
Germany	0	N.A.
Ireland	0	N.A.
Italy	0	N.A.
United Kingdom	0	N.A.
United States	0	N.A.
Grand Mean	26	

Data Source: See Appendix 1

199

institutionalize the traditional division of labor within the household (Gauthier 1996;

Leira 2002).

In sum, while publicly funded childcare should theoretically increase women's

labor force participation and reduce employment inequality between men and women by

relieving mothers from the demands of full-time childcare, this effect is most likely

highly conditioned on the institutional setting. Additionally, countries with childcare

leaves should see lower levels of women's labor force participation and higher rates of

employment inequality because these leaves reinforce traditional divisions of labor.

5.2.4 Family Allowances, Support Benefits, and Tax Credits

Family allowances, support benefits, and tax credits are tax or cash incentives that

are meant to decrease the costs of having and raising children. In particular, family

allowances decrease the taxable income of the family or decrease the amount of tax

levied against the family, with increasing allowances according to family size (Wennemo

1994). Support benefits are usually cash benefits paid directly to fathers or mothers.

Finally, childcare tax credits are meant to offset the cost of private childcare by

decreasing the amount of tax levied against the family according to how much the family

spent on childcare (Wennemo 1994). Childcare tax credits are more prevalent in

countries with low levels of publicly funded childcare.

Changes in public expenditure on family allowances, support benefits, and tax

credits as a percentage of GDP are presented in Figure 5.3. Many countries spend more

on these allowances and benefits than they do on parental leaves and childcare combined

Figure 5.3: Change in Expenditure on Family Allowances, Support Benefits, and Tax Credits from 1960 to 2005
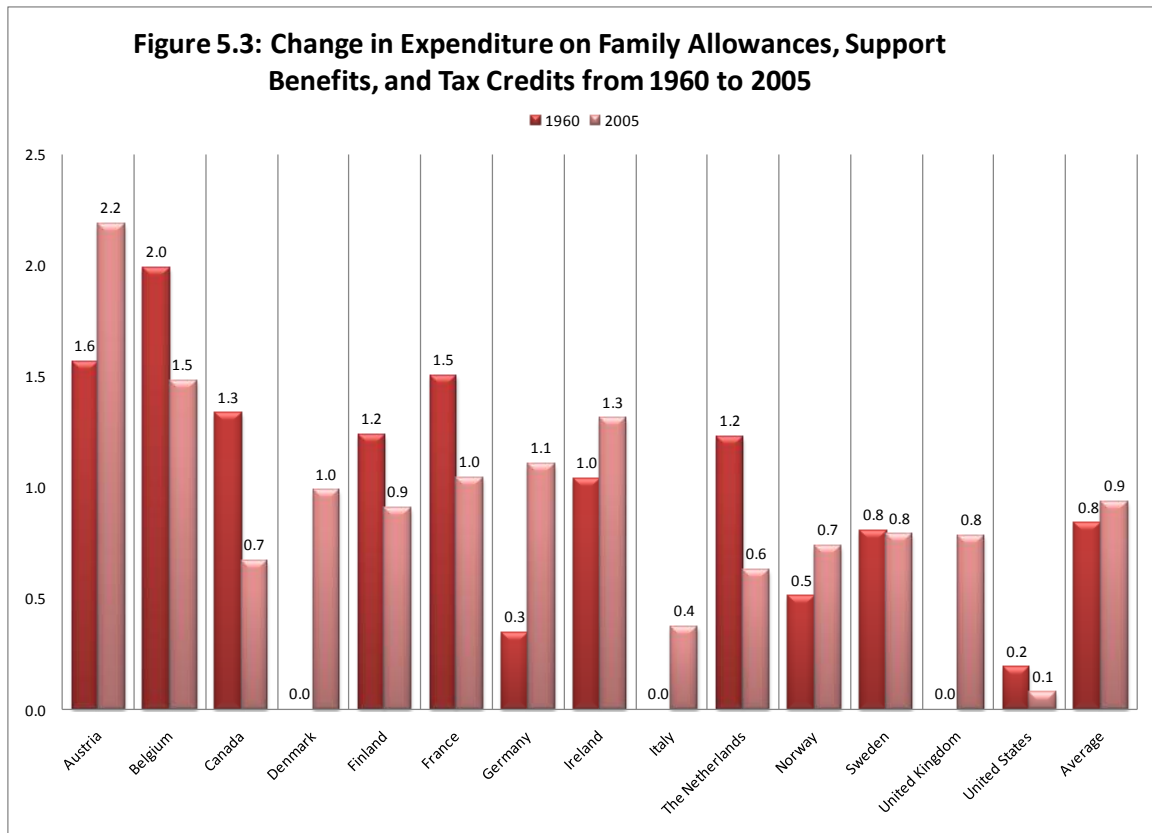
(with the exception of the social democratic countries). However, expenditure on these policies has tended to decline over the period, while expenditure on parental leaves and childcare has tended to increase. In many countries, coverage is generally extended to those in the labor force, and benefits are largely directed to men or are only directed to one segment of the population, such as the poor or families with high incomes. Theoretically, these policies should have a negligible or negative effect on women's employment outcomes. I include them in my analysis, however, because they play a prominent role in many countries' family policy schemes.

5.3 Impact of Family Policies on Women's Employment Inequality

As described in the previous section, there is good reason to believe that family policies are associated with women's employment outcomes. In this section, I review the literature that empirically assesses this hypothesized connection. This question has taken on increasing importance, with the reliance of modern welfare states on high levels of women's employment. The bulk of work done in this area has been female labor force participation rates, so this review is heavily focused on that outcome. The weight of evidence in the literature suggests that generous maternity leaves and high levels of publicly-funded childcare are associated with increased rates of female labor force participation and reduced employment inequality between men and women.

Stryker and Eliason (2003), in a study of six welfare states using fuzzy set methods, find that high levels of publicly funded childcare are causally sufficient for high aggregate rates of female labor force participation, as are high levels of public sector employment. Furthermore, Eliason, Stryker, and Tranby (2008), using annual data on 14 countries and fuzzy set methods, find that high levels of publicly funded childcare, maternity leaves, and public employment are, individually, causally sufficient to produce higher rates of female labor force participation. Using intention-to-treat analysis, Eliason, Stryker, and Tranby (2008), find that public employment, high levels of publicly funded childcare, and maternity leaves are causally connected to high levels of female labor force participation, while parental leaves, family allowances, support benefits, and tax credits do not change or decrease female labor force participation rates. Hicks and Kenworthy (2008), using data for every fifth year on 14 countries and fixed effects

regression analyses, find that countries with more generous family policies and public employment have higher rates of female employment, even when controlling for women's average educational attainment. However, when examining over time variation within countries, they find that women's educational attainment fully mediates the impact of family policies on female employment rates.

Winegarden and Bracy (1995), in a fixed-effects analysis, find that longer duration paid leaves are associated with higher aggregate rates of female labor force participation. Ruhm and his colleague, using econometric techniques and longitudinal data from 1960 to 1989, find that maternity leaves are associated with increases in female labor force participation (Ruhm and Teague 1995; Ruhm 1996). However, these results are mediated by the length of the leave, with short to moderate length leaves being positively associated with employment-to-population ratios and rates of female labor force participation. Long leaves, on the other hand, are negatively associated with these outcomes. They also find that unpaid leaves, of any length, are associated with higher levels of unemployment (Ruhm and Teague 1995). Finally, Ferrarini (2003) finds that parental leaves, especially those with high wage replacement levels, are positively correlated with women's economic activity. On the other hand, low or unpaid leaves, especially childcare leaves, are negatively related to female labor force participation (Ferrarini 2003).

Jauomotte (2002), using aggregate panel data on 17 OECD countries from 1985-1999 and econometric techniques, finds that childcare subsidies and paid parental leaves tend to stimulate full-time labor force participation rather than part-time participation.

She also finds that child benefits exert a negative impact on female participation, due to their lump-sum character. Finally, she concludes that female educational attainment, low unemployment rates, and cultural attitudes remain major determinants of female labor force participation.

This literature also suggests that generous family policies are related to a number of other positive outcomes, some of which have been described in the previous chapter. Several scholars have found that maternity leaves and childcare are associated with lower levels of poverty (Vleminkx and Smeeding 2001; Esping-Andersen et. al. 2002). Both Ferrarini (2003) and Winegarden and Bracy (1995) found that maternity leaves, especially those of fairly long duration, are associated with increased fertility. Finally, Winegarden and Bracy (1995) find that long duration maternity leaves are associated with lower rates of infant mortality.

Comparative researchers using cross-sectional or retrospective individual-level data have tended to come to the same general conclusions as those using aggregate data, but their findings are generally more nuanced. The analyses done using individual level data by and large use simple comparisons between rates of women's employment outcomes and family policies, and are not as sophisticated or complete as analysis done using aggregate data. The most common individual-level data used in these studies in the Luxembourg Income Study data, which provides harmonized cross-national, cross-sectional income data on several welfare states, including Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States. It is

important to note that scholars who use the LIS data frequently do not do multilevel or hierarchical linear modeling directly, even if they claim to do so, because it is impossible to do so given the way that the LIS data was distributed until 2010 (Misra, Budig, and Boeckmann 2010).

Gornick, Meyers, and Ross (1998), using LIS data and simple comparisons and rankings, find that mothers who live in countries with high levels of publicly available childcare and longer, high wage-replacement maternity leaves are more likely to work than those in countries that provide less support (Gornick 1997; Gornick, Meyers, and Ross 1998). Pettit and Hook (2005), using a single wave of LIS data from the mid-1990s and multi-level methods, find that generous parental leaves keep women with young children attached to the paid labor force, but that extended leaves are negatively associated with employment for women with young children. Generous public childcare increases employment rates among women with young children and married women. They also find no relationship between the growth rate of service sector in the previous year and women's employment.

Korpi (2000), in his analysis of LIS data using simple comparisons and rankings, finds that countries with policies that support a dual earner family, including generous childcare for infants and maternity and paternity leaves, have lower disparities between men's and women's employment levels (both among married women and women with children), lower levels of marginal jobs attachment, and positive attitudes towards women's employment. Countries with general family supportive policies, including generous cash child allowances, family tax benefits, and public day care for children ages

3-5, have high disparities between men's and women's employment levels (especially among mothers), and negative attitudes towards women's employment, but low levels of marginal job attachment, largely because there are not a lot of marginal jobs in these countries (Korpi 2000). Finally, countries that have low levels of both types of policies have medium levels of disparities between men's and women's employment levels, generally positive attitudes towards women's employment, and high levels of marginal job attachment.

In two related studies analyzing LIS data using simple comparisons and linear regressions controlling for age, Misra, Budig, and Moller (2007) and Misra, Moller, and Budig (2007) find that policies that help women balance care and work responsibilities by explicitly defamilizing care work are positively related to labor force participation rates and hourly wages and negatively associated with poverty rates, especially among mothers. On the other hand, policies that explicitly familize care work by rewarding it are negatively associated with labor force participation rates and hourly wages, especially among mothers. Finally, countries that have limited family policies are between the other two types of countries in terms of rates of labor force participation and hourly wages. Both of the latter family policy regimes are associated with fairly high poverty rates, especially among mothers (Misra, Moller, and Budig 2007; Misra, Budig, and Moller 2007).

In more recent research, Budig, Misra, and Boeckmann (2009) and Misra, Budig, and Boeckmann (2010) analyze one wave of LIS data and family policy information collected by the authors. Impressively, for this literature, they use linear regressions,

logistic regressions, and two-stage Heckman sample selection correction estimation

procedures while controlling for labor market factors, human capital factors, motherhood,

and cultural support for the employment of mothers. They find that mothers' full-time

employment also increases in contexts with supportive parental leave and childcare

policies (Misra, Budig, and Boeckmann 2010). In an analysis of the motherhood wage

penalty, they find that public care for younger children (infants and toddlers)

unambiguously reduces the motherhood wage penalty, while parental leaves have a

curvilinear affect with short or very long leaves increasing the wage penalty (Budig,

Misra, and Boeckmann 2009).

In one of the only other available studies to focus on the wage gap, and the only

study to focus on occupational gender segregation, Mandel and Semyonov (2005; 2006),

using LIS data for 20 countries, find that generous family policies (specifically, longer

maternity leaves and more generous public childcare coverage), reduce gender earnings

disparities. However, they also find that generous family policies increase completely

offsets the reduction in gender earnings disparities caused by family policies. In other

words, generous family policies have the unintended consequence of a more gender

segregated labor market, which has detrimental implications for earnings inequality

between men and women. However, they do not examine the processes through which

this effect occurs (Mandel and Semyonov 2005; 2006).

Scholars have also used other individual level data sources to find effects of

family policies on women's employment outcomes. Stier, Lewin-Epstein and Braun

(2001) analyze retrospective ISSP data using multinomial logistic regressions that control

for age, education, hours of work, employment pattern, and occupational status. They find that employment continuity is highest in countries that provide high levels of support for working mothers, while lower levels of support are associated with discontinuity in employment. Moreover, in countries with lower levels of supportive policies, employment discontinuities are strongly related to one's position in the labor market, with high levels of occupational status being associated with fewer negative effects of motherhood. This is most likely because these women are in jobs that allow them to have maternity leaves, and they can afford to use the market to provide childcare (Kelly 1999; Kelly 2003).

In their analysis on the effect of the availability of publicly funded childcare on female labor force participation in Germany, Kreyenfeld and Hank (2000) find that the availability of childcare has no impact on women's employment. They conclude that this is largely due to the irregular, and frequently short, hours that childcare centers are open in Germany, meaning that they are unlikely to facilitate mother's employment (Kreyenfeld and Hank 2000). This non-effect seems logical, given that childcare in Germany is largely focused on preprimary education and is not oriented toward facilitating mother's employment (Gauthier 1996).

There are only a few studies in this area that use longitudinal data. In one, Ronsen and Sundstrom (2000) compare the effects of parental leave and publicly funded childcare on the employment of mothers in Sweden, Norway, and Finland using event history analysis. They find that a generous and flexible parental leave program, such as the Swedish system, will encourage more mothers to work up to eligibility for leave

before birth, and remain in the labor market throughout the child birthing years. In a plan with a shorter entitlement period, like the Norwegian system, pre-birth work incentives will be lower; additionally, eligible women will tend to resume employment sooner. However, a larger number of Norwegian women will ultimately end up outside the labor force because it is more difficult to balance work and family responsibilities because of the inflexible entitlement system. Finally, due to both the childcare leave and the moderate flexibility present in the Finnish system, the extended and long leaves present in Finland mean that women stay out of the labor force for an extended period of time, which could have negative consequences for women's careers and earnings potential and may reinforce an unequal division of labor in the home. Moreover, they show the increases in local supply of public day care is positively related to employment entry after childbirth in all three countries, but that childcare leaves seem to discourage entry into employment (Ronsen and Sundstrom 2002).

In another study, Uunk, Kalmijn, and Muffels (2005) use the European Community Household Panel (ECHP) data on thirteen countries and panel analysis. They find that in countries with more generous public childcare, the reduction in working hours after first childbirth is lower than in countries with less generous public childcare, and that public childcare can explain one-third of the observed country differences in this "child effect". However, they also find that the effect of public childcare is confounded by economic affluence and egalitarian gender role values (see also Lewis et. al. 2008). In addition to these studies, there are a number of country-level studies that tend to confirm these comparative analyses (Moen 1989; Leibowitz, Klerman, and Waite 1992;

Joesch 1994; 1997; Ondrich, Spiess, and Yang 1996; Ondrich et. al. 1999). To sum up, the available literature seems to suggest that family policies, especially generous ones, do mediate the relationship between the market and family and make it easier for women to balance work and care demands. However, these effects are largely contingent on the characteristics of the policies themselves. For example, the existing literature demonstrates that maternity leaves of short to moderate length have a positive impact on women's labor force outcomes, while long leaves, especially those that are low or unpaid, such as childcare leaves, have a negative impact on women's labor force outcomes. Similarly, publicly funded childcare for infants and toddlers is almost always positively linked to women's employment outcomes, while publicly funded childcare for older children has a more variable impact, depending on the country used and the way it is measured.

The impact of family policies on women's employment outcomes is also highly mediated by institutional context. In countries with a set of family policies that are explicitly designed to promote women's employment and gender equality such as generous parental and paternity leaves and childcare for children of all ages that is open long hours and is of high quality, family policies are generally positively associated with women's employment outcomes. On the other hand, in countries with family policies that are designed to reinforce the traditional division of labor in the household (such as short maternity leaves, childcare that is focused on education, or extensive family allowances and support benefits), family policies tend to be negatively associated with women's employment outcomes. In countries with low levels of benefits, family policies

are generally not associated with women's employment outcomes, rather, women's employment is heavily contingent on market processes.

In short, we know a lot about how family policies are related to women's employment outcomes, especially rates of labor force participation. However, there is still much left to learn. We know relatively little about how family policies influence the hours of women's work or women's employment inequality in terms of wages or occupational gender segregation. In other words, while we know that family policies influence the rate at which women work, more research needs to be done on how family policies impact a variety of important outcomes, including, but not limited to, the likelihood of being employed full-time versus part-time, the gender wage gap, and occupational gender segregation.

5.4 Conclusion

In this chapter, I have reviewed the existing literature on family policies in order to understand if and how these policies influence women's employment outcomes. Toward this end, I reviewed the development of family policies in modern welfare states, arguing that welfare states introduced these policies for a variety of different reasons and these policies were meant to serve a variety of different purposes. In this section, I focused particularly on parental leave, publicly funded childcare, and payments to families, arguing that these policies are the most likely to directly influence women's employment outcomes. However, the impact of these policies is not always entirely clear because maternity leaves of different lengths theoretically influence women's

employment outcomes, and the institutional characteristics of childcare may influence its ability to facilitate women's employment.

In the final section of the chapter, I reviewed the existing literature that empirically assesses the impact of family polices on female labor force outcomes. This literature reveals that, in fact, family policies that are aimed at increasing women's employment do just that, while policies that are aimed at maintaining the traditional division of labor are negatively associated with women's employment.

In the next chapter, I conduct an empirical analysis of the effect of family policies on the women's employment outcomes described earlier. By way of introducing that chapter in this conclusion, I describe how I contribute to the literature described above and the empirical expectations that I develop from this literature. I contribute to this literature by examining the effects of family policies and public employment on women's employment outcomes from 1960-2008 using methods that can more accurately account for the non-independence of observations while accounting for additional welfare state and labor market processes in order to determine if welfare state policies and practices continue to have the expected impact on women's labor force participation when larger economic and labor market forces are accounted for. I also examine the effects of indexes of parental leaves, public childcare for ages 0-2, public childcare for ages 3 to school age, family allowances, benefits, and tax credits, and public employment. Finally and perhaps most importantly, I contribute by extending my analyses to measures of women's employment inequality, including women's rates of and concentration in part-time work and age-grade labor force participation rates, which has not been done in

previous studies, and the male-female wage gap and occupational gender segregation, which has not been studied using aggregate level data. I also examine the effect of leave length and pay, childcare coverage and expenditure, childcare leaves, and family allowances and tax credits separately on women's employment inequality.

The totality of this literature leads me to expect that specific types of generous family policies should be associated with higher levels of female labor force participation and increased equality between men and women in part time work and the male-female wage gap. In particular, I expect that more generous public care, especially for younger children, will have a positive impact on women's labor force participation. More generous maternity and parental leaves may also be associated with higher levels of women's labor force participation. I also expect that maternity and parental leaves of up to a year in length, and more highly paid leaves, should also be associated with higher levels of female labor force participation. Because the longest maternity leave in my sample is a year in length, I can make no claims about maternity leaves longer than a year. However, parental leaves longer than a year in length and childcare leaves should have a negligible or negative effect on women's labor force participation rates. More generous family allowances, credits, and support benefits should have a negligible or negative impact on female labor force participation rates. Although there is little literature on the impact of family policies for women of various ages, I expect to find that the effects of family policies should be concentrated on labor force participation rates for younger women because they are both in the peak childbearing age and are also getting established in the labor market.

I expect that more generous parental leaves and childcare for children of all ages should reduce rates of and concentration of women in part-time employment by allowing them to maintain attachment to full-time work even with children, although there is no literature on this dependent variable. However, there is a plausible alternative expectation that parental leaves and childcare might facilitate part-time, but not full-time, employment because part-time work may be particularly attractive to mothers, especially in countries where part-time work is less marginalized and is of high-quality.

I expect that more generous parental leaves and childcare for children of all ages should reduce the male-female wage gap by allowing women to maintain attachment to work even with children, a period which would generally see reduced rates of female labor force participation. One study would lead me to expect that more generous parental leaves and childcare (Mandel and Semyonov 2005; 2006) will lead to increased occupational gender segregation, however, that study was done using LIS data at one point in time, so these expectations are tentative.

In one study, women's average years of schooling decreases the impact of family policies on women's labor force participation to a negligible level (Hicks and Kenworthy 2008), so I may also see this result; and the other labor market and welfare state processes, particularly employment in services, may have a similar effect. However, in one cross-sectional individual-level study, employment in services had no impact on women's employment (Pettit and Hook 2005), so, alternatively, this variable may not influence the relationship between family policies and women's labor force participation rates. Additionally, in fuzzy set analyses that can make causal inferences, family policies

and public employment are shown to be causally sufficient for higher levels of female labor force participation (Stryker and Eliason 2004, Eliason, Stryker, and Tranby 2008), meaning that while these factors are causally connected to female labor force participation rates, other factors may also lead to an increase in female labor force participation rates. Finally, in related intention-to-treat analyses, Eliason, Stryker, Tranby, and Hamilton (2010) find that women's educational attainment, while important, has a weaker causal impact on women's labor force participation rates than generous family policies and public employment. Thus, I may find that family policies, labor market, and welfare state processes all generate higher levels of labor force participation rates.

Chapter 6: Family Policies and Women's Employment Inequality: An Empirical Analysis

6.1 Introduction

In the previous chapter, I described the literature that assesses the impact of family policies on women's employment outcomes. I concluded that chapter with a description of the empirical expectations that I derived from that relatively limited, but expanding, literature. In this chapter, I conduct the empirical analysis that investigates the role of family policies on the various measures of women's employment inequality described in detail in the fourth chapter. I use the "base models" established in Chapter 4 for each of the dependent variables as a starting point and then add family policy covariates to the model to see what role family policies play in women's employment inequality while controlling for the labor market and welfare state factors in the base model. Because I have established the model fit for each of the base models in Chapter 4 and the random and residual components of the model do not tend to change dramatically with the addition of family policies, I do not present the model fitting process in this chapter.

I measure the effect of family policies in multiple steps. First, I investigate the impact of the relative generosity of family policies using the two family policy generosity indices. Next, I investigate the role of family policies on each of the measures of women's employment inequality in two sub-steps. First, I use indexes for each of the four types of family policies considered, including the parental leave index, the childcare index for children ages 0-2 and 3-school age, and the family allowances, support benefits, and tax credits index. Second, I disaggregate these indexes into their various

216

components, focusing in particular on a) the effects of the various types of leaves, the length of the leave, and the wage replacement rate or leave pay; b) coverage of childcare and guaranteed slots for childcare for children of various ages; and c) if a childcare tax credit is available and the level of expenditure on various family policies. I use this strategy in order to analyze the various ways that family policies might influence women's employment inequality, in particular, overall generosity compared to generosity in specific family policy areas and the structure of the policy compared to expenditure on family policies. The various measures of family policy that I use, and the rationale for placing many of these measures in separate analyses, are described in detail in Chapter 3.

6.2 Overall Family Policy Generosity and Women's Employment Inequality

In this section, I investigate the impact of the relative generosity of family policies using the two family policy generosity indices on each of the measures of women's employment inequality described in Chapter 4. In particular, this section investigates the extent to which overall generosity of family policy matters for women's employment inequality. I describe both the full models for each of these dependent variables and the estimated effect of the family policy index, when significant.

Table 6.1 contains estimates from mixed models adding the family policy generosity index to the base model for overall rates of female labor force participation. The most notable finding in this table is that the family policy generosity indexes have no influence on women's labor force participation rates, nor are there significant random effects for these variables. This finding is not particularly surprising, with these overall

Table 6.1: Mixed Model Results Estimating the Effect of the Family Policy Generosity Indexes on Women's Labor Force Participation Rates

Variable	Estimate		S.E.
Fixed Effects			
Leaves and Childcare Index, 5 Year Lag	-0.298		(0.418)
Family Allowances and Tax Credits Index, 5 Year Lag	-0.216		(0.225)
Lagged Employment in Services	0.358	***	(0.064)
Lagged Female Average Years of School	-0.569		(0.359)
Lagged Real GDP	0.455	*	(0.206)
Lagged Unemployment Rate	0.103	*	(0.047)
Lagged Left Cab and Corp Scale	-0.357		(0.464)
Lagged Cumulative Females in Parliament	0.097		(0.316)
Lagged Individual Taxation	0.080		(0.206)
Lagged Public Sector Employment	0.561	*	(0.199)
Lagged Female Share of the Labor Force	0.311		(0.174)
Time	-0.013		(0.122)
Intercept	15.258	*	(6.532)
Random Effects			
Leaves and Childcare Index, 5 Year Lag	1.329		(0.687)
Family Allowances and Tax Credits Index, 5 Year Lag	0.627		(0.371)
Lagged Employment in Services	0.541	**	(0.172)
Lagged Female Average Years of School	0.726		(2.180)
Lagged Real GDP	0.623	**	(0.203)
Lagged Unemployment Rate	0.286	*	(0.101)
Lagged Left Cab and Corp Scale	0.000		(0.000)
Lagged Cumulative Females in Parliament	0.786		(0.551)
Lagged Individual Taxation	1.103		(0.639)
Lagged Public Sector Employment	0.720	**	(0.229)
Lagged Female Share of the Labor Force	0.477	**	(0.152)
Time	0.379	*	(0.153)
Intercept	22.890		(13.018)
Serial Correlation and Residual Variation:			
Rho	0.991	***	(0.006)
Gamma	0.989	***	(0.005)
Residual	1.158	***	(0.047)
Proportion of Variance Explained	91.41%		
N	561		
Countries	14		
-2 Log-Likelihood	-978.15		
Fixed Effect Parms	13		
Random/Serial/Residual Parms	16		
AIC	1972.30		
BIC	1977.40		

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

Table 6.2: Mixed Model Results Estimating the Effect of the Family Policy Generosity Indexes on Age-Graded Women's Labor Force Participation Rates

	Ages 15-24		Ages 25-34		Ages 35-44		Ages 45-54	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects								
Leaves and Childcare Index, 5 Year Lag	-0.001	(0.485)	-0.058	(0.619)	-0.747	(0.391)	0.097	(0.232)
Family Allowances and Tax Credits Index, 5 Year Lag	-0.062	(0.270)	-0.188	(0.147)	0.003	(0.228)	0.179	(0.230)
Lagged Employment in Services	0.420 *	(0.151)	0.286 ***	(0.069)	0.110	(0.078)	0.186	(0.100)
Lagged Female Average Years of School	0.439	(0.415)	0.439	(0.557)	-0.003	(0.665)	-0.933	(0.779)
Lagged Real GDP	0.661 **	(0.212)	0.284 **	(0.108)	0.154	(0.081)	0.042	(0.131)
Lagged Unemployment Rate	-0.058	(0.049)	0.065	(0.039)	-0.068	(0.044)	-0.045	(0.033)
Lagged Left Cab and Corp Scale	-2.196	(2.174)	1.262	(0.901)	0.512	(0.683)	-0.908	(0.974)
Lagged Cumulative Females in Parliament	0.270	(0.386)	-0.532	(0.438)	-0.265	(0.543)	0.297	(0.400)
Lagged Individual Taxation	-0.250	(0.405)	-0.058	(0.513)	0.512	(0.481)	0.009	(0.283)
Lagged Public Sector Employment	0.400	(0.271)	-0.100	(0.281)	0.066	(0.221)	0.140	(0.265)
Lagged Female Share of the Labor Force	-0.117	(0.140)	0.433 ***	(0.085)	0.495 **	(0.172)	0.419 *	(0.168)
Time	-0.713 ***	(0.105)	1.208 ***	(0.214)	1.177 ***	(0.145)	0.671 ***	(0.146)
Time Squared	--	--	-0.149 ***	(0.027)	-0.104 ***	(0.025)	--	--
Intercept	36.108 ***	(6.455)	14.763 ***	(5.192)	17.942 *	(6.611)	20.755 **	(5.195)
Random Effects								
Leaves and Childcare Index, 5 Year Lag	--	--	2.810 **	(0.950)	--	--	--	--
Family Allowances and Tax Credits Index, 5 Year Lag	--	--	2.378 **	(0.851)	--	--	--	--
Time	--	--	1.176 **	(0.291)	0.643 **	(0.144)	--	--
Time Squared	--	--	0.168	(0.040)	0.079 *	(0.018)	--	--
Intercept	--	--	21.827 ***	(5.249)	17.983 ***	(3.840)	--	--
Serial Correlation and Residual Variation:								
Rho	0.990 ***	(0.003)	0.994 ***	(0.004)	0.996 ***	(0.002)	0.993 ***	(0.003)
Residual	3.519 ***	(0.114)	1.518 ***	(0.055)	1.599 ***	(0.054)	2.194 ***	(0.074)
Proportion of Variance Explained	70.49%		91.11%		92.03%		89.88%	
N	508		508		508		508	
Countries	14		14		14		14	
-2 Log-Likelihood	-994.75		-843.90		-883.50		-1017.50	
Fixed Effect Parms	13		15		15		15	
Random/Serial/Residual Parms	2		8		5		4	
AIC	1993.50		1695.80		1773.00		2039.00	
BIC	1994.80		1698.40		1777.90		2040.30	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

family policy measures containing multiple types of family policies that likely have competing influences on women's labor force participation rates. The balance of the model stays fairly similar to that in Chapter 4, although there are fewer significant random effects once family policy generosity is added into the model.

Table 6.2 contains estimates from mixed models adding the family policy generosity index to the base model for age-graded rates of female labor force participation. Again, the most notable finding in this table is that the family policy generosity indexes have no influence on women's labor force participation rates, with the

exception of the significant random effects for women in the 25-34 age range. The

character of these random effects is shown in Table 6.3. We can see that more generous

leaves and childcare reduce the labor force participation rates of this age group in

Canada, while more generous family policies of any kind are associated with increased

rates in Italy. This second finding is particularly interesting because Italy has the lowest

rates of female labor force participation in this age group in the sample at nearly every

point in time. These findings then may indicate that more generous family policies are

most effective at increasing female labor force participation rates when they are low to

begin with. However, this is very limited evidence with which to make this claim.

It is clear from table 6.1 and 6.2 that employment in services, along with economic

expansion in general, is the most consistent driver of women's labor force

Table 6.3: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for Female Labor Force Participation Rates for Ages 25-34

Country	5 Year Lagged Leaves and Childcare Index		5 Year Lagged Family Allowances and Tax	
	BLUP	S.E.	BLUP	S.E.
Austria	-1.484	(2.351)	0.301	(1.133)
Belgium	0.599	(1.522)	0.138	(0.978)
Canada	-5.407 **	(1.488)	-1.852	(0.984)
Denmark	-0.285	(1.651)	-1.788	(2.048)
Finland	-1.411	(1.507)	-1.774	(0.957)
France	-3.044	(1.720)	-1.704	(1.063)
West Germany	1.387	(1.657)	0.262	(0.946)
Ireland	4.073	(2.505)	-0.358	(1.015)
Italy	2.601 *	(1.217)	5.032 *	(1.499)
The Netherlands	0.677	(1.502)	0.552	(1.743)
Norway	0.541	(1.273)	-1.576	(1.769)
Sweden	-0.012	(1.275)	0.363	(1.793)
UK	0.614	(1.298)	-0.539	(1.382)
US	1.151	(1.993)	2.945	(2.010)

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6.4: Mixed Model Results Estimating the Effect of the Family Policy Generosity Indexes on Part-Time Employment

Variable	Female Part-Time Employment Rate		Female Share of Part-Time Employment		Female Share of Involuntary Part-Time Employment	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects						
Leaves and Childcare Index, 5 Year Lag	-0.259	(0.256)	-0.016	(0.266)	-2.648 *	(0.744)
Family Allowances and Tax Credits Index, 5 Year Lag	0.333	(0.166)	0.167	(0.099)	0.429	(0.439)
Lagged Employment in Services	0.173	(0.164)	0.155 *	(0.075)	0.826 *	(0.325)
Lagged Female Average Years of School	0.388	(0.411)	0.053	(0.657)	2.005 **	(0.575)
Lagged Real GDP	-0.304	(0.153)	0.162	(0.103)	-0.894 ***	(0.264)
Lagged Unemployment Rate	-0.046	(0.038)	0.028	(0.064)	-0.077	(0.182)
Lagged Left Cab and Corp Scale	-0.659	(1.200)	1.285	(0.884)	-5.090 *	(2.537)
Lagged Cumulative Females in Parliament	-1.124	(0.751)	-0.914 *	(0.372)	0.297	(0.581)
Lagged Individual Taxation	-0.267	(0.313)	-0.643 *	(0.299)	2.982	(1.722)
Lagged Public Sector Employment	-0.904	(0.778)	0.314	(0.200)	0.758	(0.417)
Lagged Female Share of the Labor Force	-0.024	(0.279)	-0.161	(0.178)	0.739 **	(0.224)
Lagged Public Sector Employment * Soc. Dem. Regime	--	--	--	--	-0.914 *	(0.486)
Social Democratic Regime	--	--	--	--	18.340	(11.283)
Time	0.649 **	(0.193)	-0.161	(0.178)	1.366 **	(0.494)
Time Squared	--	--	0.168	(0.184)	-0.101	(0.084)
Intercept	27.328	(14.029)	76.526 ***	(6.073)	-23.725	(12.263)
Random Effects						
Leaves and Childcare Index, 5 Year Lag	1.388	(0.786)	--	--	--	--
Family Allowances and Tax Credits Index, 5 Year Lag	0.724	(0.441)	--	--	--	--
Lagged Employment in Services	0.373 *	(0.137)	--	--	--	--
Lagged Female Average Years of School	0.896	(1.068)	--	--	--	--
Lagged Real GDP	0.012	(0.053)	--	--	--	--
Lagged Unemployment Rate	0.015	(0.019)	--	--	--	--
Lagged Left Cab and Corp Scale	0.553	(9.670)	--	--	--	--
Lagged Cumulative Females in Parliament	1.282	(1.298)	--	--	--	--
Lagged Individual Taxation	1.874	(1.326)	--	--	--	--
Lagged Public Sector Employment	5.897 *	(2.695)	--	--	--	--
Lagged Female Share of the Labor Force	0.077	(0.130)	--	--	--	--
Time	0.021	(0.065)	--	--	--	--
Intercept	22.510 ***	(9.026)	--	--	23.487	(19.299)
Serial Correlation and Residual Variation:						
Rho	0.999 ***	(0.001)	0.991 ***	(0.003)	0.848 ***	(0.052)
Residual	1.109 ***	(0.046)	1.129 ***	(0.043)	3.307 ***	(0.147)
Proportion of Variance Explained	96.38%		86.30%		67.17%	
N	454		454		297	
Countries	14		14		14	
-2 Log-Likelihood	-809.65		-749.85		-797.05	
Fixed Effect Parms	13		14		16	
Random/Serial/Residual Parms	15		2		3	
AIC	1639.30		1503.70		1600.10	
BIC	1645.70		1505.00		1602.00	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

participation rates in these models, although this effect declines in magnitude for older

women. However, as described in chapter 4, it is important to consider that the effects of

age and period are confused or overlapping in this analysis, such that the positive impact

on rates for younger women may be due to the fact the younger women are, the more

likely they are to work in the service sector, *or* that there is more opportunity in the

service sector for younger women, because this sector has expanded over time across

countries, *or* both.

Table 6.4 contains estimates from mixed models adding the family policy

generosity index to the base model for women's rates of part-time employment, women's

share of part-time employment, and women's share of involuntary part-time employment,

measured as a percentage of women's part-time employment. For the first two outcomes,

neither the family policy generosity index is significantly different from zero, nor are

there significant random effects in these models. Turning to the model for female share

of involuntary part-time employment, more generous levels of the leaves and childcare

index reduce the share of women in involuntary part-time employment. There is no

significant random effect for this dependent variable, indicating minimal variability in the

slope of this effect across countries.

Table 6.5 contains estimates from mixed models adding the family policy

generosity index to the base model for more direct measures of women's employment

inequality, including the male-female wage gap and occupational gender segregation.

More generous levels of the leaves and childcare index reduce the male-female wage gap.

Leaves and childcare do not have an impact on occupational gender segregation,

Table 6.5: Mixed Model Results Estimating the Effect of the Family Policy Generosity Indexes on Various Measures of Women's Employment Inequality

Variable	The Male-Female Wage Gap (5 Year Lagged Family Policies)		Size Standardized Index of Dissimilarity (2 Year Lagged Family Policies)	
	Estimate	S.E.	Estimate	S.E.
Fixed Effects				
Leaves and Childcare Index, 5 Year Lag	-0.664 *	(0.298)	-1.291	(1.182)
Family Allowances and Tax Credits Index, 5 Year Lag	-0.162	(0.211)	0.990 *	(0.435)
Lagged Employment in Services	0.093 *	(0.038)	0.257 *	(0.118)
Lagged Female Average Years of School	0.017	(0.403)	-0.042	(0.726)
Lagged Real GDP	0.066	(0.088)	-0.214	(0.249)
Lagged Unemployment Rate	0.033	(0.035)	0.167	(0.165)
Lagged Left Cab and Corp Scale	-0.530	(0.844)	0.230	(0.790)
Lagged Cumulative Females in Parliament	-0.086	(0.210)	0.393	(0.208)
Lagged Individual Taxation	-0.142	(0.429)	-3.793 ***	(0.921)
Lagged Public Sector Employment	-0.116	(0.167)	0.173	(0.200)
Lagged Female Share of the Labor Force	-0.205 *	(0.096)	-0.268	(0.177)
Lagged Female Part-Time Employment Rate	0.002	(0.051)	--	--
Time	-0.276 **	(0.107)	-0.191	(0.143)
Intercept	36.244 ***	(4.665)	62.743 ***	(4.951)
Serial Correlation:				
Rho	0.989 ***	(0.005)	0.593 ***	(0.169)
Residual	1.259 ***	(0.046)	2.566 ***	(0.243)
Proportion of Variance Explained	84.41%		48.43%	
N	417		79	
Countries	14		14	
-2 Log-Likelihood	-631.95		-205.35	
Fixed Effect Parms	14		13	
Random/Serial/Residual Parms	2		2	
AIC	1267.90		414.70	
BIC	1269.20		415.90	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

however, the family allowances and tax credits index is associated with higher levels of occupational gender segregation.

Figures 6.1 and 6.2 contain the estimated impact of the two family policy generosity indexes on the outcomes for which they are significant (involuntary part-time

Figure 6.1: Estimated Values of Female Share of Involuntary Part-Time Employment and the Male-Female Wage Gap, by Various Levels of the Parental Leave and Childcare Index

Female Share of Involuntary Part-Time Employment — Wage Gap
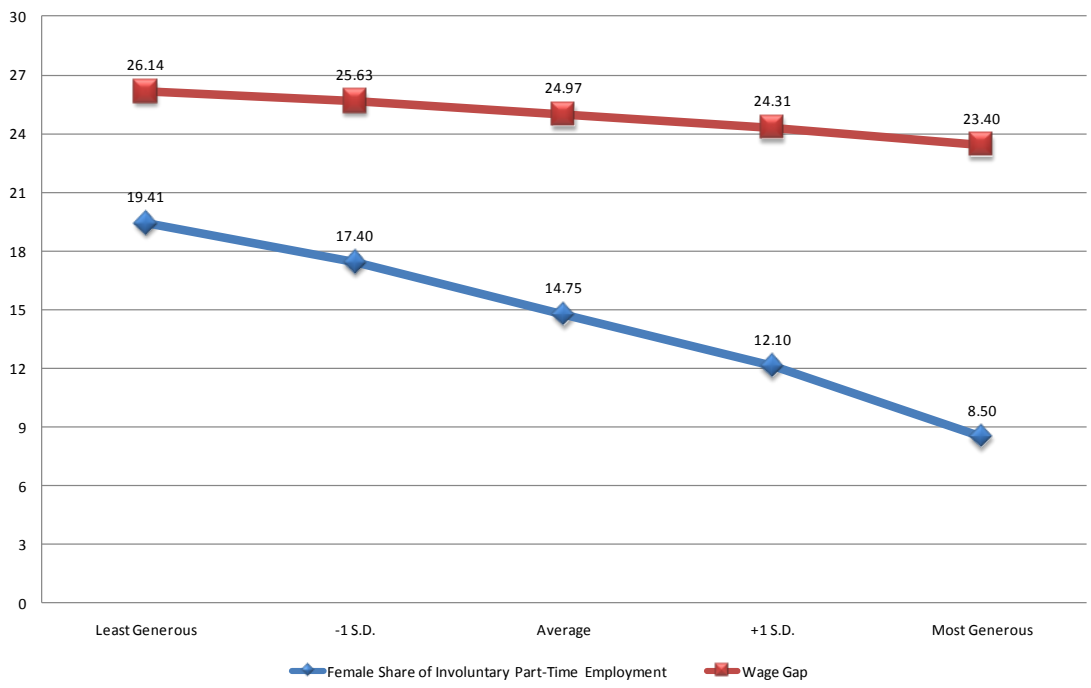
Figure 6.2: Estimated Values of the Size-Standardized Index of Dissimilarity, by Various Levels of the Family Allowances and Tax Credits Index

224
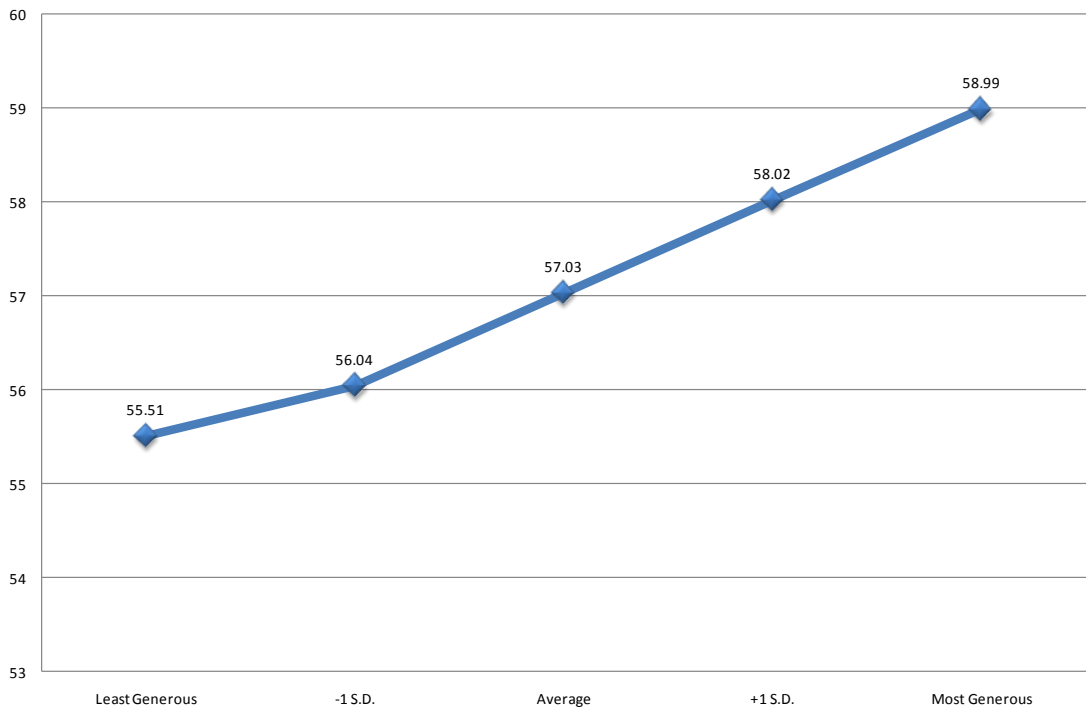
employment and the wage gap, and occupational gender segregation, respectively). All the other variables in the models are held at their mean value and these figures ignore, for simplicity, random effects. Figure 6.1 shows the estimated effects of the leaves and childcare index scores on the female share of involuntary part-time work and the male-female wage gap. These effects are fairly large, with the most generous leaves and childcare index decreasing the female share of involuntary part-time employment and the wage-gap by approximately a standard deviation and a quarter of a standard deviation, respectively. Thus, generous parental leaves and childcare as measured in this index reduce women's concentration in involuntary part-time employment and the male-female wage gap. Figure 6.2 shows the estimated impact of the allowances and tax credits index on the occupational gender segregation index. The magnitude of this effect is relatively large, with the most generous family allowances and tax credits index increasing occupational gender segregation by about two-thirds of a standard deviation.

From this analysis, we can conclude that more generous family policies have little impact on rates of women's labor force participation. However, more generous parental leaves and childcare are likely to reduce involuntary part-time employment among women and decrease the gender wage gap. On the other hand, more generous family allowances and tax credits increase occupational gender segregation. I do not speculate on the nature of the relationship here; rather, I save that for the following sections where I disaggregate this overall index into family policy specific indexes, and then into individual measures of policy structure or expenditure for each dependent variable.

6.3 Family Policies and Women's Labor Force Participation Rates

In this section, I measure the impact of generosity along four dimensions of family policies using indexes, and also disaggregate these indexes into their various components on overall rates of female labor force participation and age-graded rates of female labor force participation. In particular, I use indexes that measure the relative generosity of parental leaves, childcare for children ages 0-2 and 3-school age, and family allowances, support benefits, and tax credits and I disaggregate these indexes into: a) leave type, length, and pay; b) childcare guarantees and coverage; and c) expenditure on family policies. I also include measures of childcare leaves, which were detailed in the previous chapter. Each of these variables is lagged by five years, as described in Chapter 3.

Table 6.6 contains estimates from mixed models for overall rates of female labor force participation. In particular, models 2-5 add the family policy indexes to the base model. The scores on the information criteria decrease when family policies are included in the model, which indicates that including family policies in the model significantly improves the fit of the model to the data. However, none of the family policy indexes are significant, conforming to the analysis in the previous section that employment in services, along with economic expansion in general, is the most consistent driver of women's labor force participation rates. There is, however, a significant random effect for the parental leave index. The character of this random effect is shown in Table 6.9. More generous parental leaves are associated with higher rates of female labor force participation in Finland, West Germany, and Sweden, and lower rate in the U.S. Finland

Table 6.6: Mixed Model Results Estimating the Effect of Family Policy Indexes on Women's Labor Force Participation Rates

	Base Model		Model 2		Model 3		Model 4		Model 5	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects										
Parental Leave Index, 5 Year Lag	--	--	0.199	(2.778)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 5 Year Lag	--	--	--	--	-0.135	(0.432)	--	--	--	--
C.C. Ages 3-School Age Index, 5 Year Lag	--	--	--	--	--	--	-0.296	(0.399)	--	--
Family Allowances, Benefits, Credits Index, 5 Year Lag	--	--	--	--	--	--	--	--	-0.618	(0.701)
Lagged Employment in Services	0.293 ***	(0.054)	0.276 ***	(2.778)	0.277 ***	(0.053)	0.278 ***	(0.056)	0.349	(0.052)
Lagged Female Average Years of School	-0.578	(0.349)	-0.849	(0.048)	-0.730	(0.454)	-0.666	(0.440)	-0.580	(0.367)
Lagged Real GDP	0.493 *	(0.188)	0.477 *	(0.400)	0.442 *	(0.198)	0.446 *	(0.193)	0.462	(0.192)
Lagged Unemployment Rate	0.076	(0.042)	0.064	(0.189)	0.070	(0.044)	0.067	(0.042)	0.084	(0.044)
Lagged Left Cab and Corp Scale	-0.352	(0.384)	-0.136	(0.042)	-0.492	(0.503)	-0.439	(0.495)	-0.528	(0.409)
Lagged Cumulative Females in Parliament	0.267	(0.332)	0.105	(0.428)	0.206	(0.307)	0.227	(0.303)	0.129	(0.307)
Lagged Individual Taxation	-0.023	(0.193)	0.001	(0.330)	0.159	(0.194)	0.159	(0.192)	-0.054	(0.197)
Lagged Public Sector Employment	0.430 *	(0.209)	0.472 *	(0.194)	0.542 *	(0.192)	0.547 *	(0.190)	0.552	(0.200)
Lagged Female Share of the Labor Force	0.365 *	(0.156)	0.182	(0.175)	0.214	(0.146)	0.221	(0.148)	0.255	(0.150)
Time	-0.013	(0.104)	0.138	(0.122)	0.123	(0.098)	0.106	(0.096)	0.056	(0.106)
Intercept	17.174 *	(6.256)	23.817 ***	(4.922)	21.629 **	(6.000)	21.114 **	(6.099)	18.052	(5.990)
Random Effects										
Parental Leave Index, 5 Year Lag	--	--	7.491 **	(2.453)	--	--	--	--	--	--
Lagged Employment in Services	0.558 **	(0.135)	0.400 **	(0.139)	0.496 ***	(0.147)	0.494 ***	(0.144)	0.474 **	(0.145)
Lagged Female Average Years of School	1.787 **	(0.724)	0.436	(0.826)	0.951	(0.756)	0.306	(0.752)	0.472	(0.774)
Lagged Real GDP	0.684 ***	(0.184)	0.041	(0.042)	0.040	(0.043)	0.041	(0.043)	0.034	(0.038)
Lagged Unemployment Rate	0.295 **	(0.106)	0.001	(0.008)	0.275 *	(0.107)	0.290 **	(0.110)	0.277 **	(0.107)
Lagged Left Cab and Corp Scale	2.370	(1.510)	0.000	(0.090)	0.000	(0.090)	0.710	(4.185)	1.043	(2.602)
Lagged Cumulative Females in Parliament	1.241 ***	(0.376)	1.024 **	(0.352)	1.021 *	(0.378)	1.055 **	(0.377)	1.037 **	(0.390)
Lagged Individual Taxation	1.076	(0.588)	0.975	(0.602)	1.299	(0.650)	1.237	(0.643)	0.818	(0.645)
Lagged Public Sector Employment	0.674 **	(0.217)	0.690 *	(0.218)	0.691 **	(0.221)	0.705 ***	(0.215)	0.021	(0.105)
Lagged Female Share of the Labor Force	0.499 ***	(0.127)	0.014	(0.014)	0.017	(0.016)	0.017	(0.016)	0.020	(0.019)
Time	0.375 ***	(0.123)	0.248 **	(0.093)	0.290 *	(0.119)	0.268 *	(0.109)	0.268 *	(0.115)
Intercept	15.752 ***	(6.390)	6.930	(7.909)	13.103	(6.564)	10.969	(6.505)	12.313	(6.530)
Serial Correlation and Residual Variation:										
Rho	0.992 ***	(0.004)	0.989 ***	(0.006)	0.988 ***	(0.006)	0.988 ***	(0.006)	0.990 ***	(0.006)
Gamma	0.991 ***	(0.005)	--	--	--	--	--	--	0.988 ***	(0.007)
Residual	0.795 ***	(0.967)	1.189 ***	(0.040)	1.190 ***	(0.041)	1.174 ***	(0.040)	1.203 ***	(0.041)
Proportion of Variance Explained	94.11%		91.19%		91.18%		91.29%		91.08%	
N	666		613		574		592		598	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-1134.70		-1056.50		-1000.35		-1022.80		-1038.75	
Fixed Effect Parms	11		12		12		12		12	
Random/Serial/Residual Parms	14		14		13		13		13	
AIC	2281.40		2125.00		2008.70		2053.60		2089.50	
BIC	2285.20		2128.80		2011.30		2056.10		2093.40	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

227

and Sweden both have high scores on the parental leave index, especially later in the period. West Germany began the period with one of the highest scores on the parental leave index. The U.S. had no score on the parental leave index until the early '90's. Thus, these findings appear to be consistent with the character of parental leaves in those countries.

Table 6.7 reports the results from mixed models estimating female labor force participation using disaggregated leaves and measures of leave pay. As described in Chapters 3, I keep the leaves lengths separate because there is no evidence that all women use leaves at the same rate, the leaves have been available for different lengths of time, and the characteristics of the leaves are different across types and countries. In this analysis, I am testing to see if the effects of leave lengths on women's labor force participation are curvilinear, such that they increase over short and medium duration leaves, while longer leaves have negative effects, as hypothesized in previous research (Ruhm and Teague 1995; Moss and Deven 1999; Ronsen and Sundstrom 2002; Misra, Buding, and Moller 2007). I am also investigating the effects of leave pay and childcare leave in this analysis.

None of the maternity leave measures, including leave length, wage replacement rate, or flat rate birth benefits, are significant fixed effect predictors of female labor force participation rates. However, there is a significant random effect for maternity leave length. The character of these random effects is shown in Table 6.9. Denmark and Sweden have some of the longest maternity leaves, and have seen the largest increases in maternity leave length, in the sample, while Germany's is shorter but has been available

Table 6.7: Mixed Model Results Estimating Women's Labor Force Participation using Maternity, Parental, and Childcare Leaves

Variable	Maternity Leave Estimate	Maternity Leave S.E.	Parental Leave Estimate	Parental Leave S.E.	Child Care Leave Estimate	Child Care Leave S.E.
Fixed Effects						
Leave (In Weeks), 5 Year Lag	-0.057	(0.161)	-0.093	(0.084)	0.016	(0.011)
Leave Squared, 5 Year Lag	0.001	(0.003)	0.000	(0.000)	0.000	(0.000)
Leave Pay[a,] 5 Year Lag	0.003	(0.005)	--	--	-0.619	(0.480)
Flat-Rate Birth Benefit, 5 Year Lag	-1.378	(0.969)	--	--		
Lagged Employment in Services	0.269 ***	(0.050)	0.281 ***	(0.048)	0.272 ***	(0.045)
Lagged Female Average Years of School	-0.849	(0.407)	-0.625	(0.412)	-0.707	(0.428)
Lagged Real GDP	0.489 *	(0.191)	0.540 *	(0.230)	0.441 *	(0.190)
Lagged Unemployment Rate	0.067	(0.042)	0.079	(0.045)	0.058	(0.041)
Lagged Left Cab and Corp Scale	-0.100	(0.402)	-0.590	(0.362)	-0.415	(0.429)
Lagged Cumulative Females in Parliament	0.121	(0.326)	0.080	(0.386)	0.232	(0.309)
Lagged Individual Taxation	0.017	(0.197)	-0.024	(0.193)	0.053	(0.200)
Lagged Public Sector Employment	0.478 *	(0.178)	0.496 *	(0.189)	0.528 *	(0.187)
Lagged Female Share of the Labor Force	0.179	(0.121)	0.341 *	(0.145)	0.168	(0.120)
Time	0.134	(0.092)	0.073	(0.094)	0.134	(0.088)
Intercept	25.442 ***	(5.123)	16.719 **	(5.250)	23.411 ***	(5.100)
Random Effects						
Leave (In Weeks), 5 Year Lag	0.193 ***	(0.075)	--	--	--	--
Leave Squared, 5 Year Lag	0.002	(0.003)	--	--	--	--
Leave Pay[a,] 5 Year Lag	0.000	(0.000)	--	--	--	--
Flat-Rate Birth Benefit, 5 Year Lag	1.315	(4.456)	--	--	--	--
Lagged Employment in Services	0.425 **	(0.140)	0.328 *	(0.140)	0.532 ***	(0.117)
Lagged Female Average Years of School	0.281	(0.810)	0.480	(1.369)	0.000	(0.438)
Lagged Real GDP	0.042	(0.044)	0.238	(0.160)	0.034	(0.039)
Lagged Unemployment Rate	0.001	(0.008)	0.156 ***	(0.008)	0.160 ***	(0.008)
Lagged Left Cab and Corp Scale	2.315	(1.640)	1.325	(1.640)	1.727	(1.194)
Lagged Cumulative Females in Parliament	0.827 *	(0.349)	0.319	(0.692)	0.037	(0.254)
Lagged Individual Taxation	1.014	(0.599)	1.124	(0.599)	1.082	(0.774)
Lagged Public Sector Employment	0.723 **	(0.229)	0.072 ***	(0.145)	0.676	(0.445)
Lagged Female Share of the Labor Force	0.014	(0.015)	0.039	(0.030)	0.012	(0.013)
Time	0.248 *	(0.104)	0.000	(0.104)	0.000	(0.116)
Intercept	11.031	(6.651)	15.912 **	(6.651)	17.159 ***	(4.446)
Serial Correlation and Residual Variation:						
Rho	0.990 ***	(0.006)	0.995 ***	(0.004)	0.987 ***	(0.006)
Gamma	--	--	0.993	(0.006)	--	--
Residual	1.176 ***	(0.040)	1.121 ***	(0.030)	1.235 ***	(0.050)
Proportion of Variance Explained	91.29%		91.69%		90.85%	
N	613		613		613	
Countries	14		14		14	
-2 Log-Likelihood	-1065.65		-1060.90		-1073.70	
Fixed Effect Parms	15		13		14	
Random/Serial/Residual Parms	17		14		13	
AIC	2145.30		2139.80		2155.40	
BIC	2149.80		2145.50		2157.90	

Note: Estimation method is REML
a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave
 * p < .05, ** p < .01, *** p < .001

Table 6.8: Mixed Model Results Estimating Women's Labor Force Participation using Childcare Guarantees and Coverage

Variable	Guarantees		Coverage	
	Estimate	S.E.	Estimate	S.E.
Fixed Effects				
Childcare Ages 0-2, 5 Year Lag	-0.212	(0.225)	-0.003	(0.031)
Childcare Ages 3-School Age, 5 Year Lag	-0.326	(0.306)	0.021	(0.025)
Lagged Employment in Services	0.249 **	(0.064)	0.274 ***	(0.053)
Lagged Female Average Years of School	-0.406	(0.608)	-0.580	(0.623)
Lagged Real GDP	0.485 *	(0.225)	0.478 *	(0.210)
Lagged Unemployment Rate	0.057	(0.048)	0.074	(0.044)
Lagged Left Cab and Corp Scale	-0.399	(0.661)	-0.509	(0.569)
Lagged Cumulative Females in Parliament	0.329	(0.284)	-0.101	(0.480)
Lagged Individual Taxation	0.355	(0.261)	0.021	(0.212)
Lagged Public Sector Employment	0.721 **	(0.170)	0.506 *	(0.225)
Lagged Female Share of the Labor Force	0.109	(0.107)	0.421 *	(0.182)
Time	0.047	(0.090)	0.058	(0.108)
Intercept	23.261 **	(5.628)	14.572 *	(6.890)
Random Effects				
Childcare Ages 0-2, 5 Year Lag	--	--	1.743 ***	(0.245)
Childcare Ages 3-School Age, 5 Year Lag	--	--	0.201	(0.430)
Lagged Employment in Services	0.461 **	(0.144)	0.334 *	(0.130)
Lagged Female Average Years of School	0.515	(0.828)	2.390	(1.869)
Lagged Real GDP	0.013	(0.023)	0.232	(0.143)
Lagged Unemployment Rate	0.007 ***	(0.016)	0.129 *	(0.058)
Lagged Left Cab and Corp Scale	0.000	(0.000)	0.000	(0.175)
Lagged Cumulative Females in Parliament	1.045 *	(0.429)	1.315	(1.152)
Lagged Individual Taxation	0.807	(0.938)	0.970	(0.592)
Lagged Public Sector Employment	0.605 **	(0.226)	0.201	(0.252)
Lagged Female Share of the Labor Force	0.007	(0.009)	0.054	(0.040)
Time	0.277 **	(0.121)	0.000	(0.134)
Intercept	12.433	(6.756)	21.958 ***	(4.917)
Serial Correlation and Residual Variation:				
Rho	0.977 ***	(0.010)	0.993 ***	(0.007)
Gamma	--	--	0.989	(0.010)
Residual	1.223 ***	(0.047)	0.996 ***	(0.028)
Proportion of Variance Explained	90.93%		92.62%	
N	468		549	
Countries	14		14	
-2 Log-Likelihood	-830.05		1911.70	
Fixed Effect Parms	13		13	
Random/Serial/Residual Parms	13		15	
AIC	1283.91		1929.70	
BIC	1375.72		1935.40	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

for the whole period. The U.S., on the other hand, had no national maternity leave in

place until 1994. Therefore, the findings that longer maternity leaves are positively

associated with women's labor force participation rates in Denmark, Sweden, and West

Germany and negatively associated in the U.S. are consistent with the character of

maternity leaves in these countries (see table 5.1 in the previous chapter). In the second

and third models, neither parental leave length or childcare leave length or pay has

significant fixed or random effects.

Table 6.8 reports the results from mixed models estimating female labor force

participation using childcare guarantees indicators, or dummy variables indicating

whether the government policy guarantees a childcare space for children, and childcare

coverage, or the percentage of children in publicly funded childcare for children ages

zero to two and three through school age. While the fixed effect of coverage for children

ages 0-2 is not significant, there is a significant random effect for this variable (Table

6.9). This table demonstrates that increasing childcare for infants and toddlers is

positively associated with women's labor force participation rates in Austria, Denmark,

the Netherlands, Norway, and Sweden, and negatively associated with women's labor

force participation rates in Canada. These findings may be reflective of the high level of

and large increases in childcare for children in this age bracket in Denmark, Sweden,

Norway, and the Netherlands; the rapid increase since in the '80's in coverage in Austria;

and the low level and little increase in Canada (see table 5.2 in the previous chapter).

The significant random effects in the Scandinavian countries especially are not

particularly surprising given that high levels of coverage for this age group increase

Table 6.9: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for Female Labor Force Participation Rates

Country	Parental Leave Index, Five Year Lagged		Maternity Leave Length (in Weeks, 5 Year Lag		Childcare Coverage Ages 0-2, 5 Year Lag	
	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.
Austria	6.886	(5.535)	0.142	(0.161)	1.114 *	(0.540)
Belgium	0.518	(5.404)	0.033	(0.173)	0.487	(0.484)
Canada	1.799	(3.004)	0.104	(0.104)	-5.666 ***	(0.616)
Denmark	4.855	(4.434)	0.205 *	(0.101)	0.959 *	(0.486)
Finland	6.769 *	(3.053)	-0.073	(0.110)	0.418	(0.494)
France	2.510	(5.215)	-0.021	(0.181)	0.363	(0.495)
West Germany	9.066 *	(4.612)	0.242 *	(0.121)	0.409	(0.548)
Ireland	-0.130	(6.257)	0.007	(0.181)	1.216	(0.880)
Italy	2.647	(6.991)	0.041	(0.141)	-0.149	(0.599)
The Netherlands	0.125	(3.447)	0.015	(0.116)	0.984 *	(0.486)
Norway	1.792	(3.029)	-0.052	(0.122)	0.945 *	(0.495)
Sweden	10.550 *	(5.247)	0.386 **	(0.148)	0.956 *	(0.481)
UK	-2.379	(3.407)	-0.002	(0.190)	-0.576	(1.069)
US	-14.340 **	(4.389)	-0.360 **	(0.117)	0.040	(0.572)

* $p < .05$, ** $p < .01$, *** $p < .001$

both supply and demand for women's employment in these countries.

Table 6.10 contains estimates from mixed models of women's labor force participation rates using expenditure on various family policies, including expenditure on maternity and parental leaves, on publicly funded childcare, and on family allowances and support benefits, along with a dummy variable indicating the presence of a childcare tax credit. (Expenditure is measured as a percentage of GDP.) There is no relationship between social policy expenditure and rates of female labor force participation in these models.

In the next models, I estimate the impact of family policy indexes and disaggregated family policies on age-graded rates of female labor force participation. I

Table 6.10: Mixed Model Results Estimating Women's Labor Force Participation using Family Policy Expenditure

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Expenditure on Parental Leaves, 5 Year Lag	0.135	(0.702)	--	--	--	--
Expenditure on Childcare, 5 Year Lag	--	--	0.309	(0.292)	--	--
Expenditure on Familly Allowances, Benefits, 5 Year Lag	--	--	--	--	0.011	(0.307)
Childcare Tax Credits	--	--	--	--	-0.399	(0.309)
Lagged Employment in Services	0.346 ***	(0.054)	0.385 ***	(0.065)	0.348 ***	(0.052)
Lagged Female Average Years of School	-0.675	(0.406)	-0.810	(0.543)	-0.586	(0.371)
Lagged Real GDP	0.498 *	(0.215)	0.538 *	(0.246)	0.459 *	(0.191)
Lagged Unemployment Rate	0.080	(0.044)	0.145 **	(0.043)	0.083	(0.044)
Lagged Left Cab and Corp Scale	-0.488	(0.395)	0.046	(0.583)	-0.536	(0.415)
Lagged Cumulative Females in Parliament	0.078	(0.331)	-0.355	(0.328)	0.138	(0.311)
Lagged Individual Taxation	-0.055	(0.204)	0.169	(0.245)	-0.053	(0.200)
Lagged Public Sector Employment	0.552 *	(0.194)	0.591 *	(0.216)	0.557 *	(0.199)
Lagged Female Share of the Labor Force	0.284	(0.160)	0.357	(0.232)	0.255	(0.151)
Time	0.046	(0.109)	0.096	(0.139)	0.057	(0.105)
Intercept	17.424 *	(6.155)	13.850	(8.717)	17.986 *	(6.033)
Random Effects						
Lagged Employment in Services	0.292 **	(0.127)	0.366 *	(0.178)	0.462 **	(0.145)
Lagged Female Average Years of School	0.147	(0.700)	0.705	(0.899)	0.027	(0.795)
Lagged Real GDP	0.058	(0.055)	0.058	(0.058)	0.034	(0.038)
Lagged Unemployment Rate	0.212 **	(0.082)	0.188	(0.098)	0.277 **	(0.106)
Lagged Left Cab and Corp Scale	2.481	(2.293)	4.612	(2.753)	1.104	(2.540)
Lagged Cumulative Females in Parliament	1.241 ***	(0.372)	1.019	(0.564)	1.019 **	(0.385)
Lagged Individual Taxation	0.695	(0.671)	0.693	(0.671)	0.856	(0.642)
Lagged Public Sector Employment	0.014	(0.108)	0.743 **	(0.262)	0.019	(0.105)
Lagged Female Share of the Labor Force	0.025	(0.023)	0.038	(0.033)	0.020	(0.019)
Time	0.286 ***	(0.077)	0.181	(0.112)	0.272 **	(0.115)
Intercept	12.433	(6.756)	5.486	(14.984)	12.875	(6.690)
Serial Correlation and Residual Variation:						
Rho	0.992 ***	(0.005)	0.993 ***	(0.005)	0.990 ***	(0.006)
Gamma	0.990 ***	(0.006)	0.991	(0.006)	0.988 ***	(0.007)
Residual	1.183 ***	(0.041)	1.342 ***	(0.056)	1.202 ***	(0.041)
Proportion of Variance Explained	91.23%		90.06%		91.09%	
N	570		397		598	
Countries	14		14		14	
-2 Log-Likelihood	-1006.05		-753.20		-1036.50	
Fixed Effect Parms	12		12		12	
Random/Serial/Residual Parms	14		14		14	
AIC	2024.10		1516.40		2091.00	
BIC	2027.90		1519.60		2094.80	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

do this because it has not been done in previous analyses, but also because one can predict that the impact of family policies is lower among younger women because they have not yet fully entered the labor force as a group, is concentrated on women in the peak childbearing age groups of 25-34, and then declines as women age. Again, it is

233

important to remember that there is missing data for the early part of the period of study for five countries on these dependent variables[38].

Table 6.11 contains summary estimates for the family policy generosity indexes. I use summary estimates here in order to reduce the number of tables. As predicted above, the effect of family policies on female labor force participation is strongest for women ages 25-34. As shown in Figure 6.3, generous parental leaves and childcare for the youngest children are associated with increasing rates of women's labor force participation for women in this age group, while family allowances, benefits, and tax credits decrease women's labor force participation rates for this age group. Again, it is important to note that the effects of age and period are confused or overlapping in this analysis, such that the positive impact on rates for younger women may be due to the fact that women are more likely to use family policies when they are younger, *or* that family policies are more generous for younger women because they have generally expanded in generosity over time across countries, *or* both. The fact that I account for time in the model as well as the relationship of the errors across time, and that the effects of the family leave indexes are not uniform across the younger age groups, all support the first explanation, but there is no way to be certain from this analyses.

One additional finding is that there are significant random effects of the parental leave index for women ages 15-24 and 25-34. Table 6.13 shows that parental leaves are associated with lower rates of female labor force participation in Canada, possibly due to

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[38] These countries are Austria (missing data from before 1988), Belgium (1975), Canada (1966), Denmark (1975), and the United Kingdom (1975).

Table 6.11: Summary Estimates for Various Family Policy Indexes from Mixed Models Estimating Women's Labor Force Participation for Various Age Groups

| | Ages 15-24 | | | Ages 25-34 | | | Ages 35-44 | | | Ages 45-54 | | |
| | Fixed Effect | | Random | Fixed Effect | | Random | Fixed Effect | | Random | Fixed Effect | | Random |
	Estimate	S.E.	Effect	Estimate	S.E.	Effect	Estimate	S.E.	Effect	Estimate	S.E.	Effect
Parental Leave Index, 5 Year Lag	-0.400	(2.221)	4.771	2.692 **	(1.041)	5.602	-1.922	(1.943)	--	-0.593	(0.493)	--
Public Child Care Index, Ages 0-2, 5 Year Lag	-0.049	(1.006)	--	1.624 ***	(0.466)	--	-0.673	(0.589)	--	0.033	(0.673)	--
Public Child Care Index, Ages 3-School Age, 5 Year Lag	0.862	(0.782)	--	1.090	(0.721)	--	-1.196	(0.814)	--	-0.138	(0.904)	--
Family Allowances,Benefits, and Credits Index, 5 Year Lag	0.130	(1.004)	--	-0.931 *	(0.526)	--	0.204	(0.951)	--	0.738	(0.893)	--

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, and the appropriate measure of time. Serial correlation structure is either AR1 or ARMA. Random effect standard errors are not shown. Random effects not shown follow the same pattern as those in table 4.13. Estimation method is REML.

* p < .05, ** p < .01, *** P < .001

Figure 6.3: Estimated Values of Labor Force Participation Rates for Women Ages 25-34, by Various Family Policy Indexes
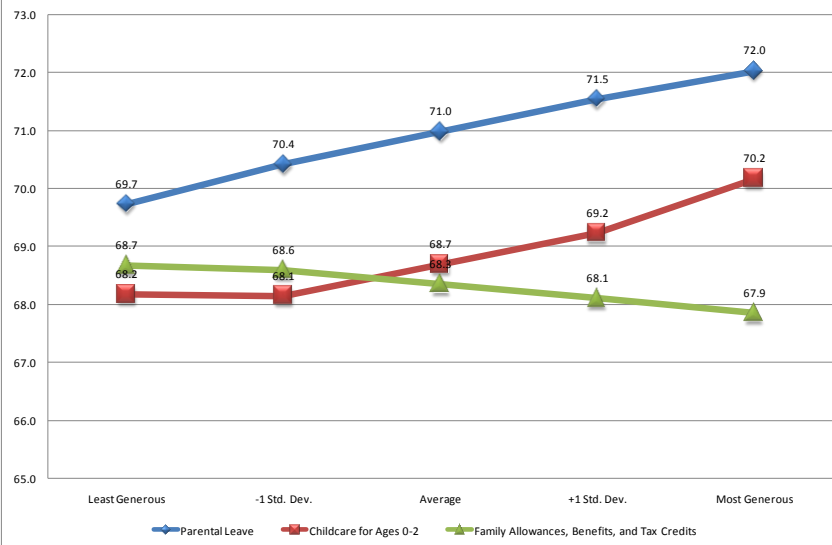
Table 6.13: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for Age-Graded Rates of Female Labor Force Participation

| Country | Parental Leave Index for FLFP, Ages 15-24 | | Parental Leave Index for FLFP, Ages 25-34 | | Childcare Leave Lengh, Ages 25-34 | |
	BLUP	S.E.	BLUP	S.E.	BLUP	S.E.
Austria	-1.916	(4.807)	0.088	(3.044)	0.002	(0.040)
Belgium	0.656	(4.755)	-0.103	(3.028)	-0.033	(0.029)
Canada	-9.887 *	(3.033)	-4.323 *	(2.310)	0.009	(0.044)
Denmark	-1.389	(4.144)	0.228	(2.845)	-0.040	(0.028)
Finland	-2.466	(3.200)	-0.651	(2.411)	-0.016	(0.039)
France	6.383	(4.579)	0.719	(3.002)	0.004	(0.038)
West Germany	-0.818	(4.330)	0.714	(2.929)	0.000	(0.046)
Ireland	4.796	(5.137)	0.385	(3.123)	0.005	(0.046)
Italy	0.102	(5.421)	-0.307	(3.185)	0.000	(0.046)
The Netherlands	0.038	(3.108)	-0.727	(2.356)	0.001	(0.037)
Norway	2.834	(2.855)	3.552	(2.198)	0.068 *	(0.028)
Sweden	3.452	(4.510)	1.224	(2.963)	0.000	(0.026)
UK	-0.428	(3.320)	0.031	(2.476)	0.000	(0.046)
US	-1.280	(4.041)	-0.829	(2.805)	0.000	(0.046)

* p < .05, ** p < .01, *** p < .001

a combination of the relatively small increase in the generosity of parental leaves over the period in this country along with some missing data early in the period.

Table 6.12 reports summary estimates for disaggregated family policy measures from mixed models estimating age-graded rates of female labor force participation, and panel A contains estimates from the measures of leaves. The same notes of caution apply in this table as in the previous one. The effect of maternity leaves is concentrated among women ages 25-34, with the linear term for maternity leave length being associated with higher levels of women's labor force participation rates among this age group. The squared maternity leave length term is negative and significant in this model, indicating a curvilinear effect of leave length, such that the positive effects of parental leave get smaller as maternity leaves get longer. This relationship is demonstrated graphically in Figure 6.4, with the positive effect of parental leaves peaking at 35 weeks and declining

Figure 6.4: Estimated Values of Age-Graded Women's Labor Force Participation Rates by Various Maternity Leave Lengths
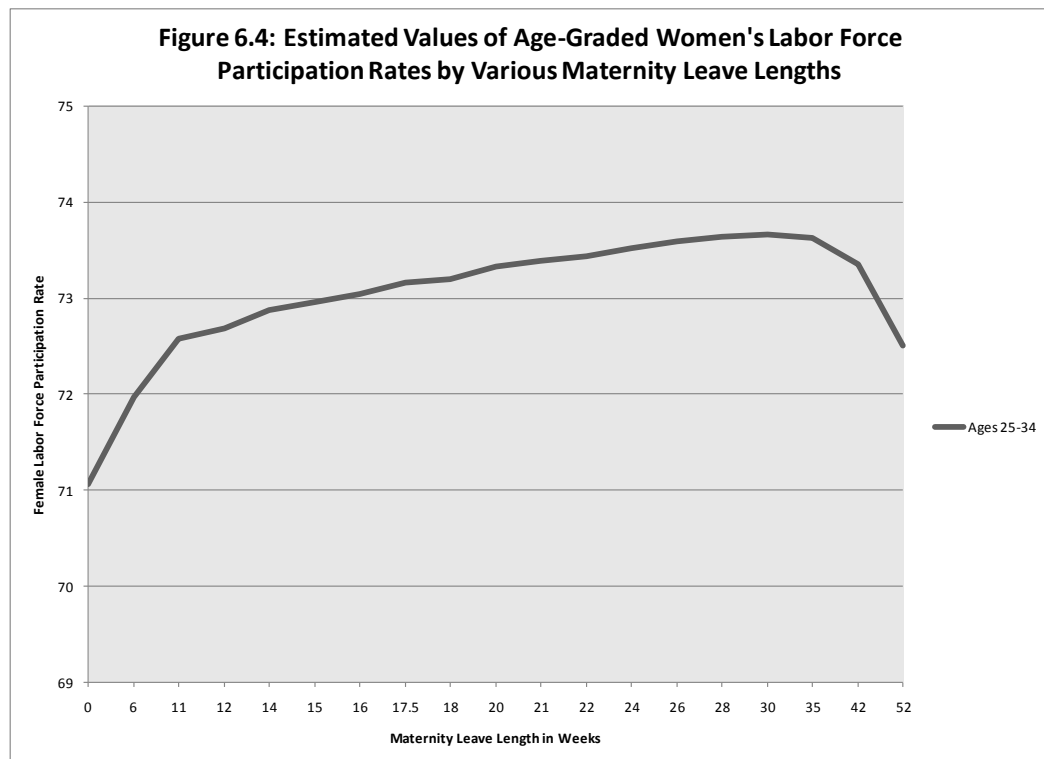
Table 6.12: Summary Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating Women's Labor Force Participation for Various Age Groups

	Ages 15-24			Ages 25-34			Ages 35-44			Ages 45-54		
	Fixed Effect		Random	Fixed Effect		Random	Fixed Effect		Random	Fixed Effect		Random
	Estimate	S.E.	Effect	Estimate	S.E.	Effect	Estimate	S.E.	Effect	Estimate	S.E.	Effect
Panel A: Leaves												
Maternity Leave												
Maternity Leave (In Weeks)	-0.038	(0.149)	--	0.167 *	(0.070)	--	-0.150	(0.110)	--	-0.010	(0.042)	--
Maternity Leave Squared	0.000	(0.002)	--	-0.003 **	(0.001)	--	0.002	(0.002)	--	0.001	(0.001)	--
Wage Replacement Rate	0.006	(0.008)	--	-0.002	(0.003)	--	0.005	(0.004)	--	-0.002	(0.005)	--
Flat-Rate Birth Benefit	0.457	(0.995)	--	-1.119	(1.012)	--	-0.380	(0.991)	--	0.070	(0.483)	--
Parental Leaves												
Parental Leave (In Weeks)	-0.006	(0.014)	--	0.030 ***	(0.006)	--	0.023 ***	(0.007)	--	-0.006	(0.012)	--
Parental Leave Squared	0.000	(0.000)	--	0.000 ***	(0.000)	--	0.000 ***	(0.000)	--	0.000	(0.000)	--
Childcare Leaves Only												
Childcare Leave (In Weeks)	-0.031	(0.018)	--	0.027	(0.030)	0.046	0.088 ***	(0.019)	--	0.021 *	(0.010)	--
Childcare Leave Squared	0.000	(0.000)	--	0.000	(0.000)	--	-0.001 ***	(0.000)	--	0.000 ***	(0.000)	--
Child Care Leave Pay	0.293	(0.395)	--	-1.045	(0.653)	--	-1.179 **	(0.445)	--	-0.628 *	(0.420)	--
Panel B: Childcare												
Guarantees												
Childcare Ages 0-2	-0.374	(0.313)	--	1.197 ***	(0.187)	--	-0.628	(0.759)	--	-1.123	(0.580)	--
Childcare Ages 3-School Age	0.287	(0.394)	--	-0.178	(0.771)	--	-0.355	(0.390)	--	-0.023	(0.139)	--
Coverage												
Childcare Ages 0-2	-0.030	(0.047)	--	0.396 ***	(0.034)	--	0.039	(0.029)	--	0.027	(0.032)	--
Childcare Ages 3-School Age	0.019	(0.020)	--	0.011	(0.014)	--	0.001	(0.016)	--	-0.015	(0.012)	--
Panel C: Expenditure												
Expenditure on Parental Leaves	-1.184	(1.138)	--	1.013	(0.825)	--	0.779	(0.484)	--	0.085	(1.087)	--
Expenditure on Childcare	1.221	(1.524)	--	0.552	(0.335)	--	-0.095	(0.490)	--	-0.005	(0.568)	--
Exp. on Familly Allowances, Benefits	0.243	(0.257)	--	-0.084	(0.153)	--	0.240	(0.280)	--	0.137	(0.322)	--
Childcare Tax Credits	-0.095	(0.608)	--	-0.521	(0.379)	--	-0.046	(0.541)	--	0.362	(0.440)	--

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, and the appropriate measure of time. Serial correlation structure is either AR1 or ARMA. Random effect standard errors are not shown. Random effects not shown follow the same pattern as those in table 4.13. Estimation method is REML.

 * p < .05, ** p < .01, *** P < .001

after that. This finding make sense, given that childbearing peaks during this age period, so negative effects on women's labor force participation rates are highest. Thus, maternity leaves can do the most to mitigate this negative effect during this time.

Parental leaves increase female labor force participation rates for women ages 25-34 and 35-44, as might be expected, given that these leaves are longer than maternity leaves and available after the maternity leave has concluded. Again, the linear term reveals that each increasing week of parental leave is associated with an increasing level of women's labor force participation, while the squared parental leave length term is negative and significant in these models, indicating a curvilinear effect of leave length, such that the positive effects of parental leave get smaller as parental leaves get longer. This relationship is demonstrated graphically in Figure 6.5 for both age groups, with the positive effect of parental leaves peaking at 72 weeks and declining after that. (Note the

Figure 6.5: Estimated Values of Age-Graded Women's Labor Force Participation Rates by Various Parental Leave Lengths

238

Figure 6.6: Estimated Values of Age-Graded Women's Labor Force Participation Rates by Various Childcare Leave Lengths
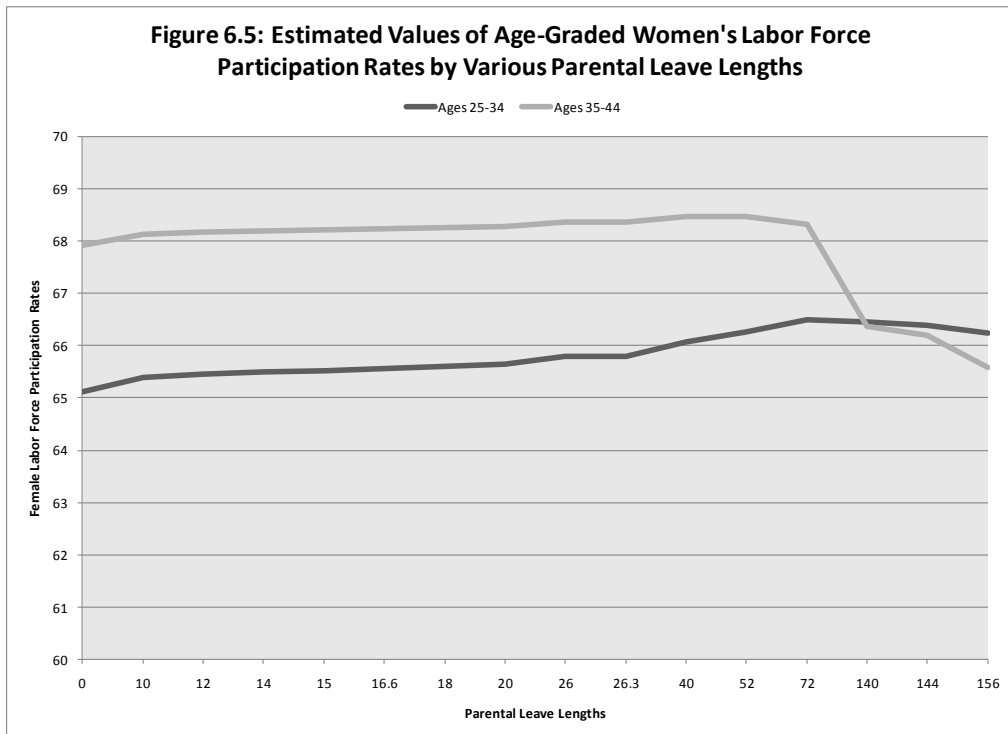
different "starting" levels of labor force participation rates for the two age groups, indicating that women are more likely to work in the later age group.)

The results for the length of childcare leave are not consistent with expectations. While I expected that childcare leaves, due to their long duration and relatively low pay, should have neutral or negative effects on rates of women's labor force participation, the results reveal that childcare leaves up to a year in length have a positive impact on labor force participation rates for women ages 35-44 and 45-54 (Figure 6.6). There is also a significant random effect of childcare leave length for women ages 25-34, with long childcare leaves being associated with high rates of labor force participation in Norway. Moreover, contrary to expectations, paid childcare leaves actually reduce rates of labor force participation for women of various ages, although this may be a function of the comparison group (composed of both unpaid leaves and no childcare leaves). The fact

239

that childcare leaves have an impact on labor force participation rates for women ages 45-54, something that no other family policy does, may indicate that women are using childcare leaves to take care of older children, as befitting the nature of the leaves. The effect is relatively small in magnitude, as can be seen in the figure.

When part-time employment is added to these models, childcare leave length drops out of significance. This may indicate that women are combining childcare leaves with part-time employment of a few hours per week, which they are allowed to do in many countries with childcare leaves. Therefore, childcare leaves may increase women's labor force participation rates, but only by shuttling women into limited part-time employment.

An important feature of the impact of leave length to note here is that, when significant, leaves increase women's rates of labor force participation up to about a year in length, and then decline after that. This finding is very consistent with previous research in this area, which predicts that the effects of leave lengths on women's labor force participation are curvilinear, such that they increase over short and medium duration leaves, while longer leaves have negative effects.

Panel B of table 6.12 contains the results for childcare guarantees and coverage. Turning first to the results for childcare guarantees, guaranteed slots in childcare for infants and toddlers are associated with a 1.2 percentage point higher level of female labor force participation for women ages 25-34. Thus, younger women benefit from government promises regarding care for infants, which makes sense given that high

240

levels of coverage for this age group increase both supply and demand for women's employment.

The results for childcare coverage are similar, with higher levels of coverage for all infants and toddlers being associated with higher levels of women's labor force participation rates for women ages 25-34. The magnitude of these effects is quite large, with the average level of coverage for infants and toddlers resulting in a female labor force participation rate 5 percentage points higher than no coverage for this age group (.396*12.75=5.05), and coverage a standard deviation above the mean resulting in a female labor force participation rate 11 percentage points higher (.396*28.45=11.27). Panel C of table 6.12 contains the results for family policy expenditure, which is consistent with the findings from the previous analysis. In particular, there are no significant effects of expenditure on age-graded rates of female labor force participation. I interpret this to mean that the structure of family policy has a greater impact on women's labor force participation rates than expenditure on family policies.

The totality of these findings indicate that generous parental leaves as measured in an index, childcare for infants and toddlers, and maternity leaves (up to a year in length) are associated with higher levels of female labor force participation for women in the peak childbearing period (25-34). These effects are generally masked in investigations of overall rates of women's labor force participation, so it is clearly important to consider age-graded rates in this analysis. However, these findings tell us nothing about the way that family policies influence the hours that women are working when they participate in the labor force. There are plausible competing expectations for the effect of family

Table 6.14: Mixed Model Results Estimating the Effect of Family Policy Indexes on Women's Rates of Part-Time Employment

Variable	Base Model Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.	Model 4 Estimate	S.E.	Model 5 Estimate	S.E.
Fixed Effects										
Parental Leave Index, 2 Year lag	--	--	-1.462	(0.967)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 2 Year lag	--	--	--	--	-0.290	(0.436)	--	--	--	--
C.C. Ages 3-School Age Index, 2 Year lag	--	--	--	--	--	--	0.467	(0.534)	--	--
Family Allowances, Benefits, Credits Index, 2 Year lag	--	--	--	--	--	--	--	--	0.876	(0.508)
Lagged Employment in Services	0.187	(0.150)	0.188	(0.150)	0.179	(0.158)	-0.197	(0.152)	0.185	(0.158)
Lagged Female Average Years of School	0.042	(0.559)	0.090	(0.494)	0.418	(0.425)	-0.207	(0.451)	0.083	(0.486)
Lagged Real GDP	-0.306 *	(0.140)	-0.291	(0.143)	-0.305	(0.154)	0.309	(0.146)	-0.288	(0.145)
Lagged Unemployment Rate	-0.015	(0.044)	-0.024	(0.043)	-0.045	(0.038)	0.036	(0.040)	-0.023	(0.042)
Lagged Left Cab and Corp Scale	-0.682	(0.848)	-0.693	(0.878)	-0.674	(1.204)	0.820	(1.141)	-0.527	(0.931)
Lagged Cumulative Females in Parliament	-0.859	(0.580)	-1.006	(0.757)	-1.125	(0.752)	0.952	(0.750)	-1.037	(0.769)
Lagged Individual Taxation	0.018	(0.386)	0.084	(0.370)	-0.359	(0.304)	0.353	(0.303)	0.083	(0.372)
Lagged Public Sector Employment	-0.795	(0.759)	-0.821	(0.764)	-0.912	(0.768)	0.916	(0.776)	-0.824	(0.769)
Lagged Female Share of the Labor Force	0.071	(0.262)	0.043	(0.275)	-0.010	(0.276)	-0.004	(0.280)	0.030	(0.279)
Time	0.547 **	(0.181)	0.605 **	(0.200)	0.643 **	(0.194)	-0.612 *	(0.206)	0.605 **	(0.199)
Intercept	24.367	(11.954)	25.589	(12.727)	26.805	(13.994)	-27.152	(13.760)	25.442	(12.650)
Random Effects										
Lagged Employment in Services	0.127 *	(0.071)	0.109	(0.073)	0.113	(0.078)	-0.112	(0.076)	0.115	(0.077)
Lagged Female Average Years of School	0.188	(1.077)	0.162	(1.082)	0.750	(1.027)	-0.136	(1.081)	0.168	(1.078)
Lagged Real GDP	0.194	(0.178)	0.527 **	(0.179)	0.015	(0.054)	-0.550 **	(0.183)	0.527 **	(0.182)
Lagged Unemployment Rate	0.013	(0.015)	0.011	(0.014)	0.012	(0.016)	-0.010	(0.014)	0.012	(0.015)
Lagged Left Cab and Corp Scale	0.187	(0.629)	0.951	(0.796)	0.778	(9.790)	-0.779	(2.808)	0.274	(0.812)
Lagged Cumulative Females in Parliament	0.804	(1.227)	1.403	(1.257)	1.253	(1.312)	-1.092	(1.251)	1.449	(1.260)
Lagged Individual Taxation	1.957	(1.092)	1.930	(1.107)	1.868	(1.272)	-1.847	(1.278)	1.726	(1.077)
Lagged Public Sector Employment	5.913 **	(2.696)	5.956 *	(2.713)	5.866 *	(2.679)	-5.799 **	(2.664)	5.973 *	(2.725)
Lagged Female Share of the Labor Force	0.068	(0.116)	0.078	(0.123)	0.083	(0.135)	-0.082	(0.127)	0.071	(0.118)
Time	0.045	(0.078)	0.505 **	(0.183)	0.028	(0.068)	-0.464 **	(0.170)	0.016	(0.057)
Intercept	25.562 ***	(9.012)	33.357 ***	(9.152)	36.081 ***	(9.726)	-34.984 ***	(9.418)	31.909 ***	(8.907)
Serial Correlation and Residual Variation:										
Rho	0.998 ***	(0.001)	0.999 ***	(0.001)	0.999 ***	(0.001)	-0.999 ***	(0.001)	0.998 ***	(0.001)
Residual	1.140 ***	(0.043)	1.127 ***	(0.044)	1.109 ***	(0.045)	1.132 ***	(0.045)	1.142 ***	(0.045)
Proportion of Variance Explained	96.28%		96.33%		96.38%		96.31%		96.28%	
N	499		484		464		469		473	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-877.50		-855.15		-820.95		-834.35		-841.95	
Fixed Effect Parms	11		12		12		12		12	
Random/Serial/Residual Parms	13		13		13		13		13	
AIC	1771.00		1726.30		1661.90		1684.70		1699.90	
BIC	1776.10		1731.50		1668.20		1689.80		1705.00	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

242

policies on part-time employment and there is little existing empirical evidence of this type. In the next section, I turn to just such an analysis.

6.4 Family Policies and Women's Part-Time Employment

In this section, I measure the impact of the relative generosity of the four types of family policies I have discussed on women's rates of part-time employment, women's share of part-time employment, and women's share of involuntary part-time employment. In particular, I use indexes that measure generosity of parental leaves, childcare for children ages 0-2 and 3-school age, and family allowances, support benefits, and tax credits, and I disaggregate these indexes into leave type, length, and pay, childcare guarantees and coverage, and expenditure on family policies. I also include measures of childcare leaves. In these analyses, the family policy variables are lagged by two years in relation to the outcome.

Table 6.14 contains estimates from mixed models for overall rates of female labor force participation. (Models 2-5 add the family policy indexes to the base model.) The scores on the information criteria decrease when family models are included in the index indicating that incorporating family policies into the model significantly improves the fit of the model to the data. However, none of the fixed effects for the family policy indexes is significant, and the model with no random effects for the family policy indexes is the best fitting model to the data.

Table 6.15 presents summary estimates for mixed models disaggregating the various family policy indexes. I present summary fixed effect estimates here because the

Table 6.15: Summary Fixed Effect Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating Women's Rates of Part-Time Employment

Panel A: Leaves, 2 Year Lag						
	Maternity Leave		Parental Leave		Child Care Leave	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Leave (In Weeks)	0.010	(0.074)	0.003	(0.016)	0.060 *	(0.026)
Leave Squared	-0.002	(0.002)	0.000	(0.000)	0.001 *	(0.000)
Leave Pay[a]	-0.015	(0.011)	--	--	1.023	(0.725)
Flat-Rate Birth Benefit	-15.316	(17.543)	--	--	--	--

Panel B: Childcare, 2 Year Lag						
	Guarantees		Coverage			
Variable	Estimate	S.E.	Estimate	S.E.		
Childcare Ages 0-2	-2.416 *	(0.817)	-0.379 ***	(0.038)	--	--
Childcare Ages 3-School Age	0.013	(0.664)	-0.035 *	(0.018)	--	--

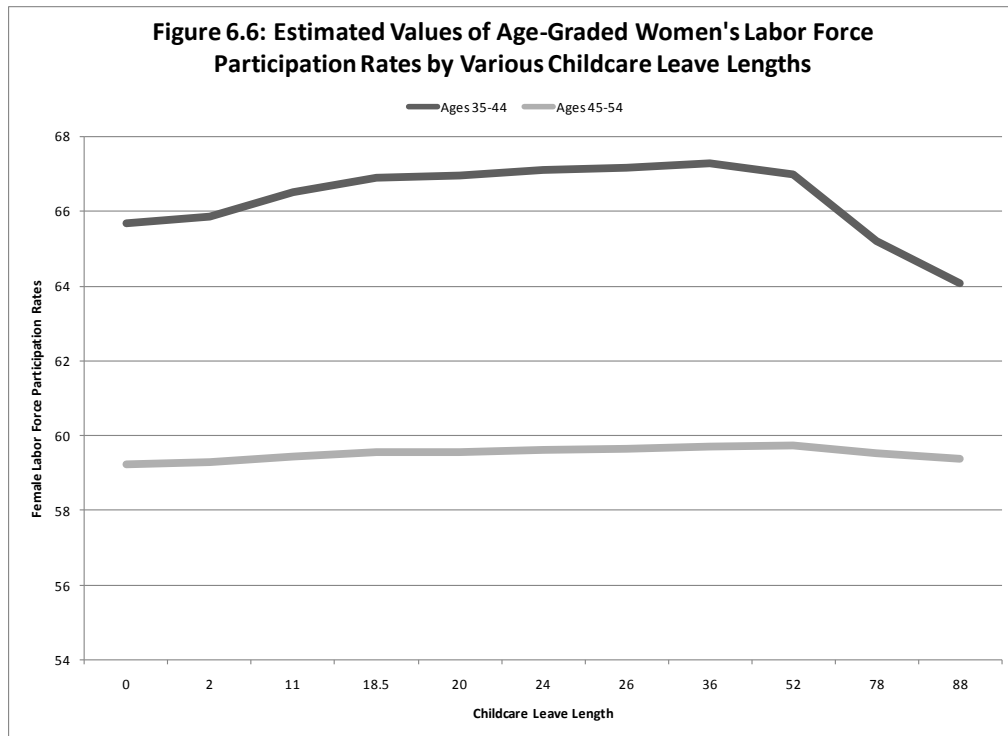| Panel C: Expenditure, 2 Year Lag						
	Maternity and Parental Leaves		Childcare		Family Allowances, Benefits	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Expenditure	-2.275 *	(0.844)	-1.237 *	(0.599)	0.008	(0.338)
Childcare Tax Credits	--	--	--	--	0.387	(0.446)

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, and time. Serial correlation structure is AR1. There are no significant random effects for the family policy measures. Random effects not shown follow the same pattern as those in table 4.15.

a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave

 * p < .05, ** p < .01, *** p < .001

mean structure and the variance components structure for these models does not change significantly from the models shown in the previous table. Therefore, there is little to be gained from presenting full models in multiple tables compared to presenting summary models in one table.

Panel A contains estimates from the measures of leaves. Maternity leave length and pay and parental leave length are not associated with women's rates of part-time

employment. However, childcare leaves increase the rate of part-time employment among women, with the effect increasing with longer leave lengths (Figure 6.7). This

Figure 6.7: Estimated Values of Women's Part-Time Employment Rates by Various Childcare Leave Lengths
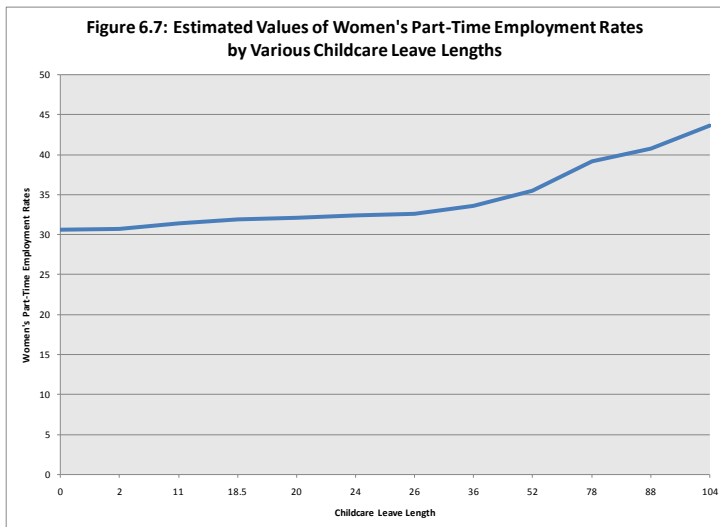
finding is consistent with the explanation provided earlier that women are combining childcare leaves with very part-time employment of a few hours per week, which they are allowed to do in many countries with childcare leaves. Therefore, childcare leaves may increase women's labor force participation rates, but only by shuttling them into part-time employment.

Panel B of table 6.15 contains the results for childcare guarantees and coverage. Turning first to the results for childcare guarantees, guaranteed slots in childcare for infants and toddlers are associated with a 2.4 percentage point decrease in the rate of part time employment among women. The results for childcare coverage are similar, with higher levels of coverage for all pre-school children being associated with lower levels of women's labor force participation rates for women ages 25-34. The magnitude of these effects is quite large, with the average level of coverage for infants and toddlers resulting in part-time employment rates 5 percentage points lower than no coverage for this age group (-.379*12.75=4.87), and the average level of coverage for pre-school age children reducing part-time employment rates by (-.035*52.89=1.85) 1.85 percentage points when

245

Table 6.16: Mixed Model Results Estimating the Effect of Family Policy Indexes on Women's Share of Part-Time Employment

	Base Model		Model 2		Model 3		Model 4		Model 5	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects										
Parental Leave Index, 2 Year lag	--	--	1.452	(1.202)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 2 Year lag	--	--	--	--	-0.986 *	(0.474)	--	--	--	--
C.C. Ages 3-School Age Index, 2 Year lag	--	--	--	--	--	--	-0.237	(0.456)		
Family Allowances, Benefits, Credits Index, 2 Year lag	--	--	--	--	--	--	--	--	0.174	(0.334)
Lagged Employment in Services	0.181 *	(0.078)	0.139 *	(0.077)	0.136 *	(0.071)	0.147 *	(0.072)	0.164 *	(0.077)
Lagged Female Average Years of School	-0.175	(0.548)	-0.152	(0.588)	0.035	(0.673)	-0.027	(0.664)	-0.102	(0.578)
Lagged Real GDP	0.130	(0.100)	0.147	(0.100)	0.158	(0.100)	0.146	(0.098)	0.149	(0.099)
Lagged Unemployment Rate	0.027	(0.058)	0.029	(0.059)	0.026	(0.063)	0.032	(0.062)	0.029	(0.061)
Lagged Left Cab and Corp Scale	-0.071	(0.931)	-0.032	(0.929)	1.225	(0.857)	1.076	(0.952)	0.450	(0.755)
Lagged Cumulative Females in Parliament	-0.663	(0.369)	-0.816 *	(0.391)	-0.883 *	(0.382)	-0.887 *	(0.384)	-0.857 *	(0.384)
Lagged Individual Taxation	-0.071	(0.535)	-0.120	(0.612)	-0.656 *	(0.289)	-0.655 *	(0.289)	-0.064	(0.541)
Lagged Public Sector Employment	0.276	(0.189)	0.310	(0.192)	0.336	(0.196)	0.320	(0.192)	0.271	(0.193)
Lagged Female Share of the Labor Force	-0.180	(0.168)	-0.184	(0.172)	-0.145	(0.173)	-0.158	(0.175)	-0.228	(0.180)
Time	0.276	(0.182)	0.215	(0.192)	0.206	(0.197)	0.211	(0.196)	0.233	(0.192)
Time Squared	-0.056	(0.031)	-0.042	(0.034)	0.044	(0.034)	-0.043	(0.034)	-0.044	(0.035)
Intercept	77.174 ***	(5.190)	77.376 ***	(5.267)	76.061 ***	(6.018)	76.759 ***	(6.064)	78.816	(5.257)
Serial Correlation and Residual Variation:										
Rho	0.991 ***	(0.003)	0.992 ***	(0.004)	0.991 ***	(0.004)	0.991 ***	(0.004)	0.992 ***	(0.003)
Residual	1.129 ***	(0.043)	1.483 ***	(0.082)	1.038 ***	(0.085)	1.102 ***	(0.080)	1.115 ***	(0.061)
Proportion of Variance Explained	86.30%		82.01%		87.40%		86.62%		86.47%	
N	499		484		464		469		472	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-828.25		-807.20		-761.75		-770.85		-777.35	
Fixed Effect Parms	12		13		13		13		13	
Random/Serial/Residual Parms	2		2		2		2		2	
AIC	1660.50		1618.4		1527.5		1545.7		1558.7	
BIC	1661.80		1619.6		1528.8		1547.0		1560.0	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

compared to no coverage for pre-school children. Panel C of table 6.15 contains the results for family policy expenditure. Not surprisingly, higher levels of expenditure on maternity leaves and childcare are associated with lower levels of part-time employment among women.

Thus, childcare coverage, especially for younger children, and more generous expenditure on maternity leaves and childcare, reduces rates of part-time work among women, while long child leaves are associated with higher rates of part-time employment among women. However, this is not the only, or even the best way, to measure hours of work, because it is important to consider inequality in hours of work. We know from previous chapters that women are heavily concentrated in part-time employment in most countries and that women are somewhat likely to be involuntarily working in part-time employment. I describe the impact of family policies on these measures next.

Table 6.16 contains estimates from mixed models for women's concentration in part-time employment. (Models 2-5 add the family policy indexes to the base model.) Generous childcare for younger children, when added to the model (model 3), reduces women's concentration in part-time work and significantly improves measures of model fit. The effect is fairly large, such that having the high score on the childcare index for younger children reduces part-time employment concentration by 1.2 percentage points. (Figure 6.8). Thus, it appears that generous childcare for younger children decreases the proportion of women in part-time employment, thereby allowing women to maintain attachment to full-time work, even with children. It is somewhat surprising that parental leaves and childcare for children 3 to school age has no impact on women's concentration

Figure 6.8: Estimated Values of Women's Share of Part-Time Employment, by Various Levels of the Childcare for Children Ages 0-2 Index

Least Generous	79.01	
-1 Std. Dev.	79.01	
Average	78.69	
+1 Std. Dev.	78.37	
Most Generous	77.80	
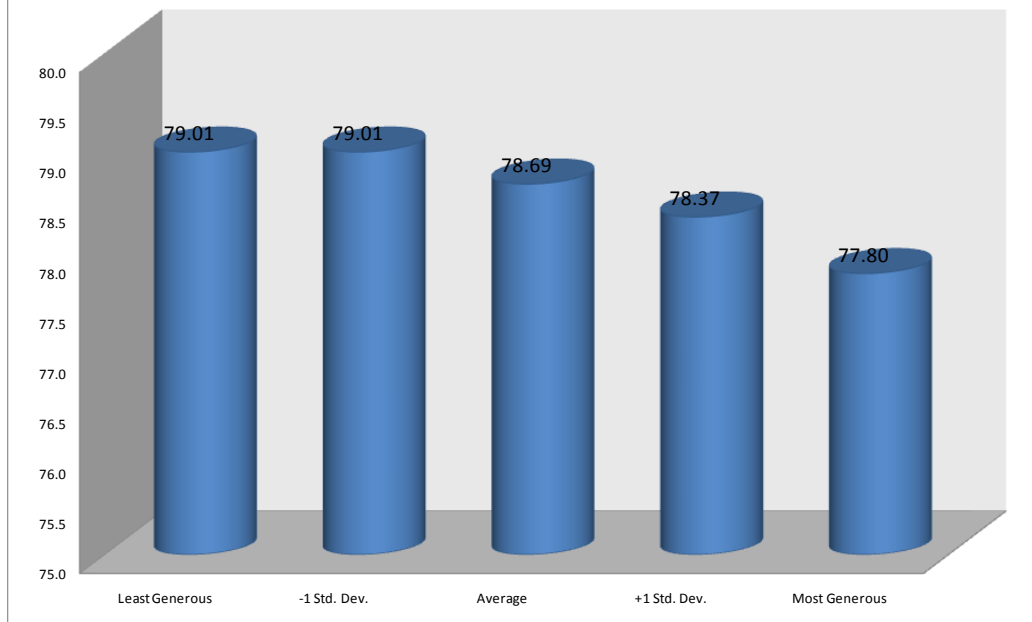
in part-time employment, although the finding for parental leaves becomes clearer in the next analysis, and the structure and intentions behind childcare for older children does not facilitate full-time employment of women.

Table 6.17 presents summary estimates for mixed models disaggregating the various family policy indexes. I again present summary fixed effect estimates here because the mean structure and the variance components structure for these models does not change significantly from the models shown in the previous table. In particular, the mean structure for variables not shown in the table is substantively similar across all of the models, there are no random effects for any variables, and the serial correlation structure always fits an AR(1) structure. Therefore, there is little to be gained from presenting full models in multiple tables compared to presenting summary models in one table.

248

Table 6.17: Summary Fixed Effect Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating Women's Share of Part-Time Employment

Panel A: Leaves, 2 Year Lag						
	Maternity Leave		Parental Leave		Child Care Leave	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Leave (In Weeks)	-0.092 *	(0.046)	-0.026 *	(0.012)	0.023	(0.015)
Leave Squared	0.001	(0.002)	0.000 *	(0.000)	0.000	(0.000)
Leave Pay[a]	-0.104 *	(0.060)	--	--	0.151	(0.609)
Flat-Rate Birth Benefit	7.489 *	(3.230)	--	--	--	--

Panel B: Childcare, 2 Year Lag						
	Guarantees		Coverage			
Variable	Estimate	S.E.	Estimate	S.E.		
Childcare Ages 0-2	-0.528 *	(0.261)	-0.320 ***	(0.095)	--	--
Childcare Ages 3-School Age	0.238	(0.177)	-0.029	(0.019)	--	--

Panel C: Expenditure, 2 Year Lag						
	Maternity and Parental Leaves		Childcare		Familly Allowances, Benefits	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Expenditure	-1.700	(1.131)	-0.957 *	(0.463)	0.195	(0.192)
Childcare Tax Credits	--	--	--	--	0.001	(0.187)

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, time, and time squared. Serial correlation structure is AR1. There are no significant random effects.

a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave

 * p < .05, ** p < .01, *** p < .001

Panel A of Table 6.17 reports the results from mixed models estimating women's concentration in part-time employment using disaggregated leaves and measures of leave pay. Longer and more highly remunerative leaves are both associated with a reduced concentration of women in part-time employment. The relationship for the wage replacement rate is demonstrated graphically in Figure 6.9, while the effect for maternity leave length is not shown graphically because it is a linear effect. However, the presence

Figure 6.9: Estimated Values of Women's Share of Part-Time Employment by Various Wage Replacement Rates
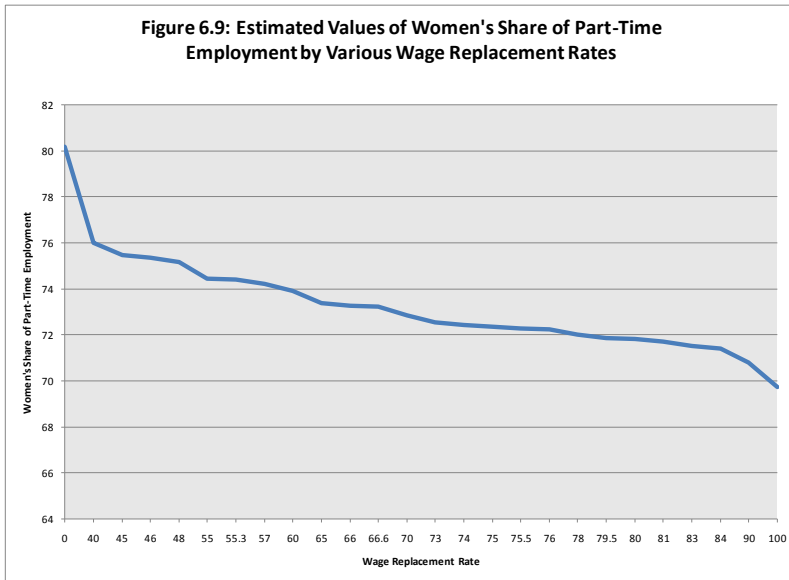
of flat-rate birth benefits is associated with an 8% increase in women's concentration in part-employment. This finding is consistent with the fact that flat-rate birth benefits are often in place for reasons

unrelated to women's employment. The significant and negative linear term for parental leave indicates that longer parental leaves decrease the concentration of women in part-time employment. Again, the squared parental leave length term is positive and significant in these models, indicating a curvilinear effect of leave length, such that the

negative effects of parental leave flatten out as parental leaves get longer. This relationship is demonstrated graphically in Figure 6.10, with the negative effect of parental leaves peaking at 72 weeks, and

Figure 6.10: Estimated Values of Women's Share of Part-Time Employment by Various Lengths of Parental Leave
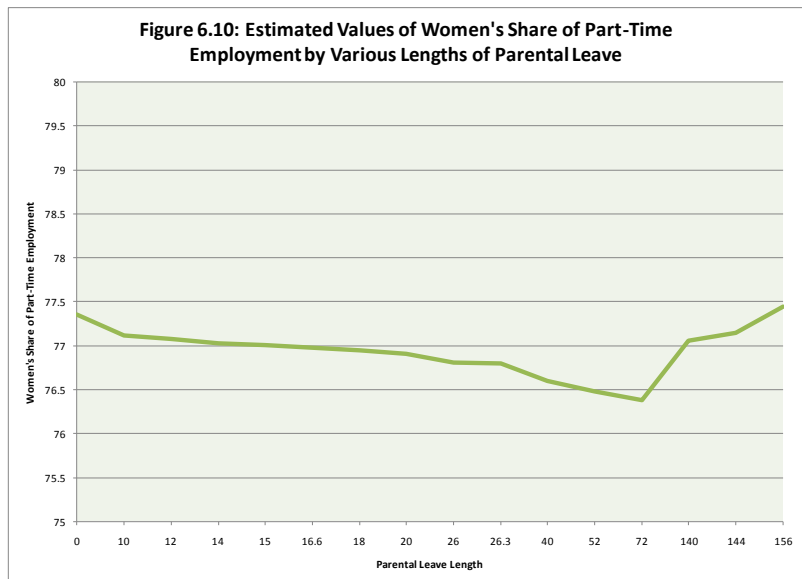
returning to the starting point for leaves of 156 weeks in length. Turning to the model for

childcare leaves, childcare leave lengths and pay are not significantly associated with

women's concentration in part-time employment.

Panel B of Table 6.17 reports the results from mixed models estimating women's

concentration in part-time employment using an indicator variable for guaranteed slots in

childcare and childcare coverage for children ages zero to two and three through school

age. Both the indicator variable for guaranteed slots and coverage for children ages zero

to two are significant, which is not surprising given the finding for the generosity index.

The magnitude of these effects is reasonably large with guaranteed childcare for young

children being associated with a .5 percentage point decrease. The highest level of

coverage for children of this age group results in a 21 percentage point decrease in

women's concentration in part-time employment, when compared with no guarantee or

no coverage. Panel C contains estimates from mixed models of women's share of part-

time employment using expenditure on various family policies. Expenditure on publicly

funded childcare is associated with low levels of women's concentration in part-time

employment.

Another measure of inequality in work hours is involuntary part-time

employment, which is measured as the percentage of women employed part-time who

report that they are involuntarily employed part-time. Table 6.18 contains estimates from

mixed models for women's concentration in involuntary part-time employment. In

particular, models 2-5 add the family policy indexes to the base model that is described in

chapter 4. Generous publicly funded childcare for children is strongly associated with

251

Variable	Base Model Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.	Model 4 Estimate	S.E.	Model 5 Estimate	S.E.
Fixed Effects										
Parental Leave Index, 2 Year lag	--	--	-3.464	(6.739)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 2 Year lag	--	--	--	--	-6.578 ***	(1.919)	--	--	--	--
C.C. Ages 3-School Age Index, 2 Year lag	--	--	--	--	--	--	-6.310 **	(1.954)	--	--
Family Allowances, Benefits, Credits Index, 2 Year lag	--	--	--	--	--	--	--	--	2.476	(1.801)
Lagged Employment in Services	0.642 *	(0.336)	0.668 *	(0.334)	0.796 *	(0.327)	0.800 *	(0.326)	0.833 *	(0.324)
Lagged Female Average Years of School	0.787	(0.947)	0.614	(0.959)	1.911 **	(0.672)	2.035 **	(0.644)	1.579 *	(0.610)
Lagged Real GDP	-1.007 ***	(0.261)	-1.014 **	(0.276)	-0.924 ***	(0.270)	-0.891 **	(0.274)	-0.991 **	(0.267)
Lagged Unemployment Rate	-0.076	(0.175)	-0.060	(0.168)	-0.070	(0.176)	-0.066	(0.174)	-0.086	(0.179)
Lagged Left Cab and Corp Scale	-4.929 *	(2.603)	-5.073 *	(2.378)	-4.447 *	(2.486)	-5.350 *	(2.692)	-5.133 *	(2.564)
Lagged Cumulative Females in Parliament	0.016	(0.637)	0.043	(0.607)	0.241	(0.568)	0.272	(0.611)	0.358	(0.562)
Lagged Individual Taxation	2.680	(1.774)	2.801	(1.705)	2.935	(1.674)	3.119	(1.617)	2.966	(1.632)
Lagged Public Sector Employment	0.544	(0.433)	0.621	(0.438)	0.713	(0.421)	0.699	(0.411)	0.775	(0.464)
Lagged Female Share of the Labor Force	0.717 ***	(0.212)	0.739 **	(0.222)	0.726 **	(0.234)	0.722 **	(0.241)	0.776 ***	(0.227)
Lagged Public Sector Employment * Soc. Dem. Regime	-1.033 **	(0.365)	-1.065 **	(0.324)	-0.977 *	(0.368)	-0.897 *	(0.388)	-0.710 *	(0.375)
Social Democratic Regime	30.644 *	(15.359)	31.293	(16.310)	19.064	(11.055)	20.049	(11.573)	17.388 **	(11.644)
Time	1.174 **	(0.443)	1.415 **	(0.489)	1.434 **	(0.476)	1.449 **	(0.488)	1.424 **	(0.469)
Time Squared	-0.048	(0.075)	-0.082	(0.078)	-0.104	(0.080)	-0.114	(0.085)	-0.094	(0.079)
Intercept	-12.879	(13.756)	-14.599	(12.523)	-25.225	(11.863)	-28.570	(12.556)	-23.246	(12.163)
Random Effects										
Intercept	37.655 *	(25.972)	42.096	(29.151)	27.858	(27.213)	40.754	(22.153)	30.364	(21.622)
Serial Correlation and Residual Variation:										
Rho	0.853 ***	(0.050)	0.845 ***	(0.052)	0.846 ***	(0.864)	22.988 ***	(0.052)	0.841 ***	(0.052)
Residual	2.313 ***	(0.228)	2.309 ***	(0.076)	2.275 ***	(0.077)	2.272 ***	(0.076)	2.320 ***	(0.078)
Proportion of Variance Explained	0.770		0.771		0.774		0.774		0.770	
N	317		303		302		302		297	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-797.05		-764.15		-753.20		-753.50		-745.90	
Fixed Effect Parms	14		15		15		15		15	
Random/Serial/Residual Parms	3		3		3		3		3	
AIC	1600.10		1534.30		1512.40		1513.00		1497.80	
BIC	1602.00		1536.20		1514.30		1515.00		1499.70	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

252

Figure 6.11: Estimated Values of Women's Share of Involuntary Part-Time Employment, by Various Levels of the Childcare Indexes
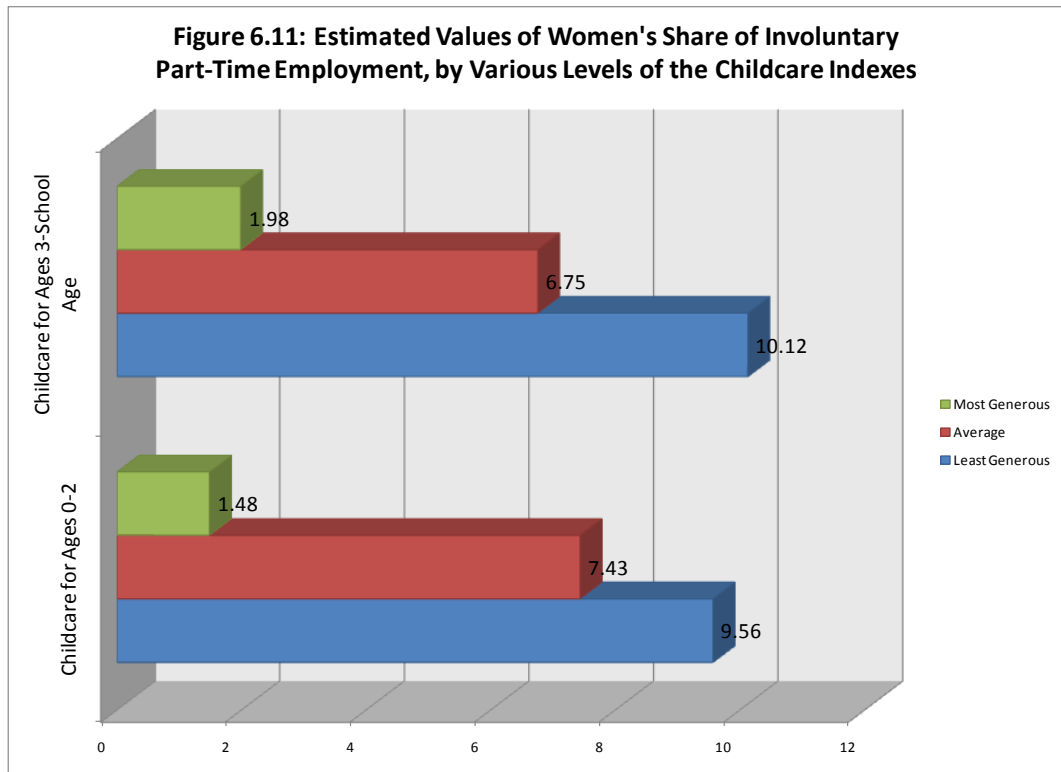
lower levels of involuntary part-time employment among. The magnitude of this effect is also fairly large, as can be seen in Figure 6.11. This finding is consistent with the explanation that generous childcare relieves women from full-time care for children and, hence, allows them to work full-time where they might otherwise work part-time in order to care for children.

Panel A of Table 6.19 reports summary estimates from mixed model results estimating involuntary part-time employment among women using leaves. Longer maternity leaves significantly decrease the percentage of women in involuntary part-time employment, although the significant squared effect indicates that this is a curvilinear effect (Figure 6.12). Neither parental leaves nor childcare leaves are associated with rates of involuntary part-time employment.

Table 6.19: Summary Fixed Effect Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating Women's Share of Involuntary Part-Time Employment

	Panel A: Leaves, 2 Year Lag					
	Maternity Leave		Parental Leave		Child Care Leave	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Leave (In Weeks)	-0.333 ***	(0.938)	0.002	(0.030)	0.001	(0.044)
Leave Squared	0.004 *	(0.015)	0.000	(0.000)	0.000	(0.000)
Leave Pay[a]	-0.006	(0.014)	--	--	0.780	(0.552)
Flat-Rate Birth Benefit	-1.845	(3.826)	--	--	--	--
	Panel B: Childcare, 2 Year Lag					
	Guarantees		Coverage			
Variable	Estimate	S.E.	Estimate	S.E.		
Childcare Ages 0-2	-5.750 **	(1.967)	-0.450 ***	(0.059)	--	--
Childcare Ages 3-School Age	-2.305 *	(1.151)	-0.350 ***	(0.057)	--	--
	Panel C: Expenditure, 2 Year Lag					
	Maternity and Parental Leaves		Childcare		Familly Allowances, Benefits	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Expenditure	-5.149	(6.701)	-3.431 *	(1.370)	4.893 *	(1.485)
Childcare Tax Credits	--	--	--	--	0.042	(0.588)

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, time, and time squared. Serial correlation structure is AR1. There is a significant random intercept that is not shown.

a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave

* $p < .05$, ** $p < .01$, *** $p < .001$

Panel B contains estimates from mixed models of women's share of involuntary part-time employment using childcare guarantees and coverage, which, as would be expected from the significant index results, are all negative and significant in these models. Turning first to the results for childcare guarantees, guaranteed slots in childcare for infants and toddlers are associated with a 6 percentage point lower level of involuntary employment among women, and guaranteed slots in childcare for children

three to school-age is similarly associated with lower levels of involuntary employment among women, although the magnitude of the effect is smaller. The results for childcare coverage are

Figure 6.12: Estimated Values of Women's Share of Involuntary Part-Time Employment by Various Lengths of Maternity Leave
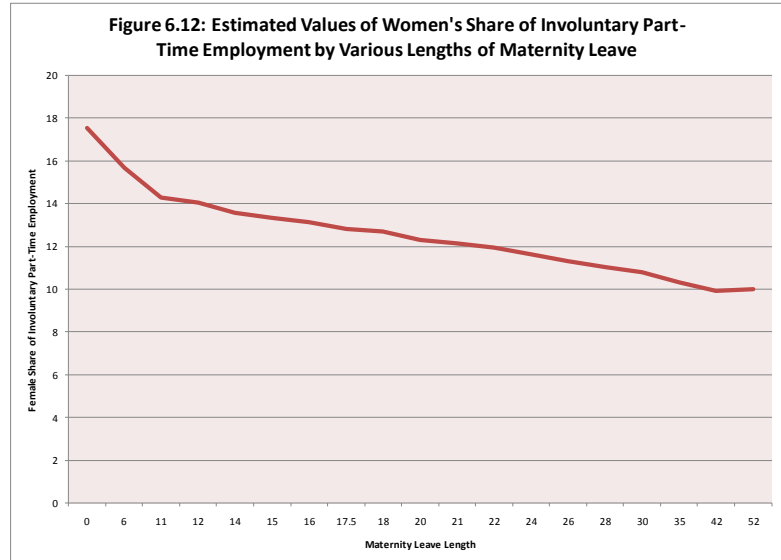
similar, with higher levels of coverage for all children being associated with lower levels of involuntary part-time employment among women. The magnitude of these coverage effects is reasonably large when considering that the average rate of women's involuntary part-time employment is approximately 15 percent, with each percentage point increase in coverage for younger children resulting in a .45 percentage decrease, and coverage for older children resulting in a .35 percentage point decrease.

Panel C contains the results of models estimating the impact of expenditure on family policies on involuntary part-time employment among women employed part-time. Public expenditure on childcare is associated with lower levels of women's involuntary employment in part-time work. On the other hand, higher levels of expenditure on family allowances, support benefits, and tax credits increase the rate of involuntary part-time employment among women.

To summarize this section, generous childcare is consistently associated with more equality in hours of work among women, especially childcare for younger children.

This finding makes sense, given that the need to care for children while participating in the labor market is a common reason women enter part-time employment. In particular, generous childcare coverage and guarantees for young children and high levels of expenditure on maternity leaves and childcare reduce the rate of part-time employment among women, while childcare leaves increase part-time employment among women.   In addition, longer parental leaves, guaranteed childcare slots for younger children, high levels of coverage for children of all ages, and high levels of expenditure on childcare all reduce women's concentration in part-time employment, thereby increasing the proportion of women working full-time. Generous childcare for children of all ages, guaranteed childcare slots, high levels of coverage, in particular, are also associated with lower levels of involuntary part-time employment.

6.5 Family Policies, the Wage-Gap, and Occupational Gender Segregation

In this section, I focus attention on direct measures of women's employment inequality, including the male-female wage gap and an index measuring occupational segregation. I follow the same analytical strategy followed in the previous two sections by first using four family policy generosity indexes and then disaggregating these indexes. Like the outcomes in the previous section, little attention has been paid to these outcomes in the family policy literature. However, they obviously have direct relevance for women's employment equality, with the wage penalty associated with motherhood being the main cause of the continued gap in wages between men and women in many countries (Budig, Misra, and Boeckmann 2009). All family policies are lagged by five

Table 6.20: Mixed Model Results Estimating the Effect of Family Policy Indexes on the Male-Female Wage Gap

	Base Model		Model 2		Model 3		Model 4		Model 5	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects										
Parental Leave Index, 5 Year Lag	--	--	-2.774 **	(0.982)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 5 Year Lag	--	--	--	--	-1.611 **	(0.602)	--	--	--	--
C.C. Ages 3-School Age Index, 5 Year Lag	--	--	--	--	--	--	-1.386 *	(0.716)		
Family Allowances, Benefits, Credits Index, 5 Year Lag	--	--	--	--	--	--	--	--	-0.406	(0.659)
Lagged Employment in Services	0.107 **	(0.039)	0.083 *	(0.045)	0.082 *	(0.039)	0.101 *	(0.041)	0.107 **	(0.041)
Lagged Female Average Years of School	-0.254	(0.420)	-0.263	(0.413)	-0.005	(0.441)	-0.213	(0.451)	-0.220	(0.410)
Lagged Real GDP	0.059	(0.095)	0.065	(0.099)	0.063	(0.091)	0.052	(0.099)	0.061	(0.096)
Lagged Unemployment Rate	0.045	(0.034)	0.041	(0.034)	0.029	(0.034)	0.043	(0.037)	0.043	(0.034)
Lagged Left Cab and Corp Scale	-0.686 *	(0.345)	-0.533	(0.706)	-0.534	(0.895)	-0.481	(0.865)	-0.419	(0.639)
Lagged Cumulative Females in Parliament	0.004	(0.205)	0.080	(0.222)	-0.023	(0.218)	0.065	(0.227)	-0.007	(0.205)
Lagged Individual Taxation	-0.361	(0.379)	-0.359	(0.388)	-0.127	(0.445)	-0.130	(0.435)	-0.364	(0.385)
Lagged Public Sector Employment	-0.165 **	(0.058)	-0.129	(0.159)	-0.096	(0.186)	-0.127	(0.176)	-0.178	(0.152)
Lagged Female Share of the Labor Force	-0.196	(0.097)	-0.216 *	(0.105)	-0.205	(0.116)	-0.221	(0.118)	-0.199 *	(0.094)
Lagged Female PT Employment Rate	0.015 *	(0.043)	0.018	(0.042)	0.004	(0.053)	0.019	(0.044)	0.014	(0.043)
Time	-0.299 **	(0.100)	-0.287 **	(0.106)	-0.290 *	(0.113)	-0.298 *	(0.107)	-0.295 **	(0.101)
Intercept	38.326 ***	(4.985)	39.914 ***	(5.243)	36.336 ***	(5.259)	38.233 ***	(6.060)	38.391 ***	(5.045)
Serial Correlation and Residual Variation:										
Rho	0.989 ***	(0.004)	0.991 ***	(0.004)	0.992 ***	(0.004)	0.992 ***	(0.004)	0.989 ***	(0.004)
	--	--	0.990 ***	(0.004)	0.989 ***	(0.004)	0.990 ***	(0.004)	--	--
Residual	0.921 ***	(0.041)	0.831 ***	(0.070)	0.944 ***	(0.069)	0.975 ***	(0.069)	0.976 ***	(0.069)
Proportion of Variance Explained	88.59%		89.71%		88.31%		87.92%		87.90%	
N	450		450		426		432		439	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-665.70		-670.65		-639.8		-655.15		-661.60	
Fixed Effect Parms	12		13		13		13		13	
Random/Serial/Residual Parms	2		3		3		3		2	
AIC	1350.10		1347.3		1285.6		1316.3		1327.2	
BIC	1352.40		1349.2		1287.5		1318.2		1328.5	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001

years in this analysis of the wage gap, and two years in the analysis of occupational gender segregation.

Table 6.20 contains estimates from mixed models for the male-female wage gap. The addition of family policies increases the fit of the model to the data (models 2-5). More generous parental leaves and childcare for children of all ages are associated with lower levels of inequality, such that having the high score on the parental leave index reduces the male-female wage gap by almost three percentage points, compared to scoring 0 on the index, having the high score on the childcare index for younger children reduces the wage gap by one and half percentage points, and having the high score on the childcare index for pre-school age children reduces the wage gap by 1.3 percentage points (Figure 6.13). Thus, it appears that generous parental leaves and childcare reduce

Figure 6.13: Estimated Levels of the Male-Female Wage Gap Using Various Family Policy Indexes
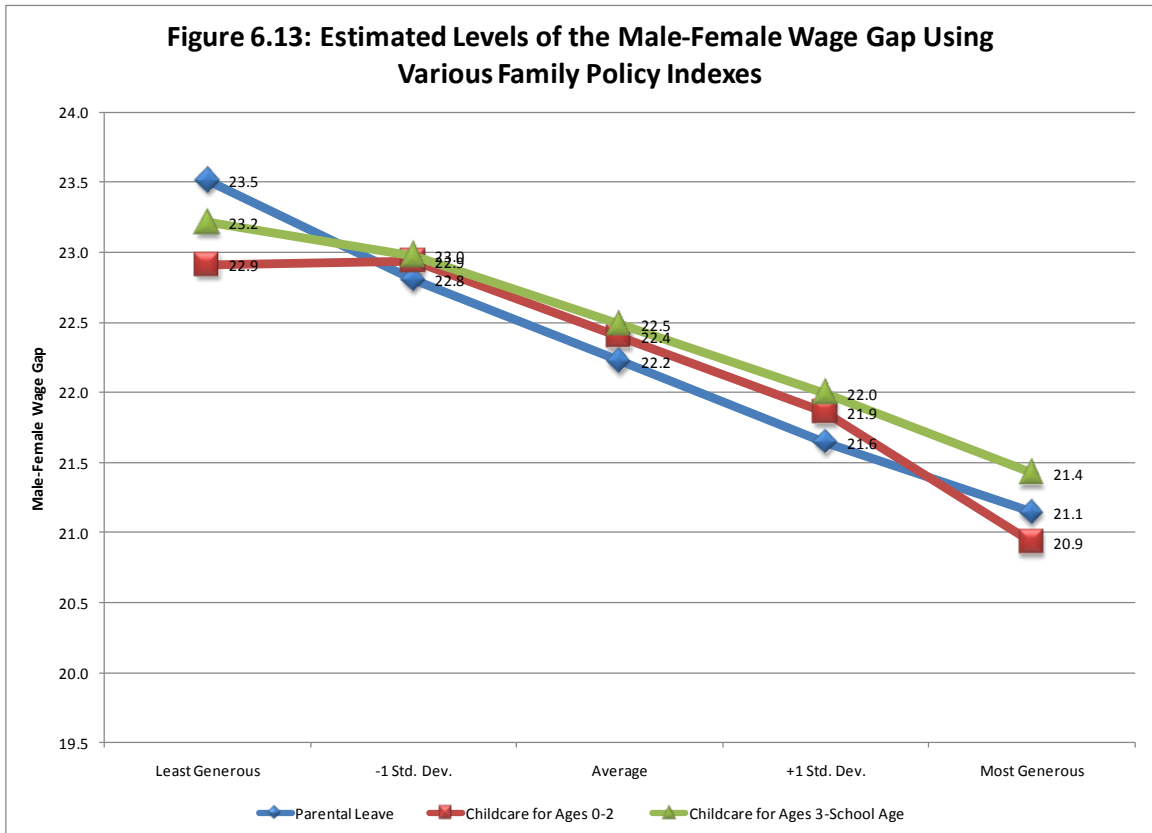
Table 6.21: Summary Fixed Effect Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating the Male-Female Wage Gap

	Panel A: Leaves, 5 Year Lag					
	Maternity Leave		Parental Leave		Child Care Leave	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Leave (In Weeks)	-0.282 **	0.102	-0.004	0.009	-0.006	0.013
Leave Squared	-0.002	0.002	0.000	0.000	0.000	0.000
Leave Pay[a]	-0.005	0.004	--	--	-0.597	0.405
Flat-Rate Birth Benefit	1.085 *	0.547	--	--	--	--
	Panel B: Childcare, 5 Year Lag					
	Guarantees		Coverage			
Variable	Estimate	S.E.	Estimate	S.E.		
Childcare Ages 0-2	-1.320 ***	0.261	-0.005 ***	0.027	--	--
Childcare Ages 3-School Age	-1.536 ***	0.171	-0.022 ***	0.014	--	--
	Panel C: Expenditure, 5 Year Lag					
	Maternity and Parental Leaves		Childcare		Familly Allowances, Benefits	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Expenditure	-9.653 *	4.795	-3.431 *	(1.370)	4.893 *	(1.485)
Childcare Tax Credits	--	--	--	--	-0.422 ***	(0.059)

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, proportion of women in part-time employment, and time. Serial correlation structure is AR1 or ARMA. There are no significant random effects.

a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave

 * p < .05, ** p < .01, *** p < .001

the male-female wage gap by allowing women to maintain attachment to employment even when they have children, a period generally associated with declining employment and reduced labor market rewards.

Panel A of Table 6.21 reports summary mixed model results estimating the male-female wage gap using disaggregated leave length and pay measures. Maternity leave length is strongly associated with lower levels of the male-female wage gap. In

particular, longer maternity leaves are associated with lower levels of the male-female wage gap and, because the squared term is not significant, this positive effect does not level off or reverse directions as maternity leaves get longer. This finding is consistent with the fact that maternity leaves allow women to maintain both their occupational status and relatively high levels of pay while having children, thus, reducing the male-female wage gap. Flat-rate birth benefits, on the other hand, increase the male-female wage gap.

Panel B reports mixed model results estimating the male-female wage gap using an indicator variable for guaranteed slots in childcare and childcare coverage for children ages zero to two and three through school age. Both the indicator variable for guaranteed slots and coverage for children of all ages are significant. The magnitude of these effects is reasonably large with guaranteed childcare being associated with a 1.3 percentage point decrease, and a 1.5 percentage point decrease in the male-female wage gap for children ages zero to two and three to school age, respectively. The coverage variables are also significant but of a much smaller magnitude, with the most generous coverage for younger children only decreasing the male-female wage gap by .3 percentage points and by 2.2 percentage points for older children.

Panel C shows that expenditure on family policy is a primary driver of the male-female wage gap, with the high expenditure on maternity and parental leaves decreasing the wage gap by 10 percentage points. There is a significant random effect for this variable, characterized in Table 6.22. Expenditure on publicly funded childcare and/or tax credits for purchasing private childcare are both associated with low levels of the

Table 6.22: Best Linear Unbiased Prediction (BLUP) of the Random Effects and Standard Errors by Country for the Male-Female Wage Gap

Country	Public Expenditure on Maternity and Parental Leaves	
	BLUP	S.E.
Austria	2.471	(2.503)
Belgium	7.184 *	(3.132)
Canada	-0.286	(2.939)
Denmark	3.292	(2.520)
Finland	3.122	(2.474)
France	2.380	(2.776)
West Germany	2.550	(2.957)
Ireland	-2.457	(3.833)
Italy	2.689	(3.479)
The Netherlands	-3.752	(3.640)
Norway	-5.441 *	(2.584)
Sweden	-4.864 *	(2.483)
UK	2.381	(3.937)
US	1.254	(4.383)

* p < .05, ** p < .01, *** p < .001

male-female wage gap. Finally, high levels of expenditure on family allowances and support benefits are associated with higher levels of the wage gap.

Table 6.23 contains estimates from mixed models estimating occupational gender segregation. It is important to remember that I have very limited information on this measure of women's employment inequality and the information I do have is highly variable across countries. Appendix 16 contains models separately estimating each index on the occupational gender segregation index, in order to ensure that the findings from the multivariate models are robust. Further, because the measure of occupational gender segregation I use (the size-standardized index of dissimilarity) is not the ideal index to use, I compare the results of table 6.23 with Appendix 17, which contains models estimating the impact of the family policy indexes on Charles and Grusky's (2004) association index. The results from these models are consistent with the results reported in Table 6.23. The addition of the family policy indexes increases the fit of the model to the data (models 2-5). The only

Table 6.23: Mixed Model Results Estimating the Effect of Family Policy Indexes on the Occupational Gender Segregation Index

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Fixed Effects										
Parental Leave Index, 2 Year Lag	--	--	0.780	(2.102)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 2 Year Lag	--	--	--	--	-0.799	(2.620)	--	--	--	--
C.C. Ages 3-School Age Index, 2 Year Lag	--	--	--	--	--	--	-1.407	(2.354)		
Family Allowances, Benefits, Credits Index, 2 Year Lag	--	--	--	--	--	--	--	--	2.169 *	(0.986)
Lagged Employment in Services	0.223 *	(0.106)	0.237 *	(0.126)	0.242 *	(0.126)	0.270 *	(0.133)	0.294 *	(0.132)
Lagged Female Average Years of School	0.153	(0.602)	0.558	(0.748)	0.420	(0.868)	0.447	(0.769)	0.495	(0.698)
Lagged Real GDP	0.168	(0.147)	0.047	(0.212)	0.110	(0.252)	0.028	(0.227)	0.007	(0.210)
Lagged Unemployment Rate	0.148	(0.145)	0.107	(0.129)	0.187	(0.184)	0.093	(0.143)	0.080	(0.129)
Lagged Left Cab and Corp Scale	1.681	(1.227)	0.545	(1.212)	0.808	(1.148)	0.676	(1.304)	0.295	(1.060)
Lagged Cumulative Females in Parliament	-0.141	(0.203)	0.111	(0.247)	0.102	(0.250)	0.125	(0.254)	0.177	(0.228)
Lagged Individual Taxation	-3.269 *	(1.279)	-3.514 ***	(0.612)	-3.766 ***	(0.479)	-3.606 ***	(0.677)	-3.476 ***	(0.621)
Lagged Public Sector Employment	0.385 *	(0.171)	0.166	(0.151)	0.209	(0.204)	0.218	(0.186)	0.198	(0.147)
Lagged Female Share of the Labor Force	-0.642 ***	(0.135)	-0.395 **	(0.148)	-0.339 *	(0.129)	-0.407 *	(0.149)	-0.421 *	(0.164)
Time	-0.299 **	(0.107)	-0.270 **	(0.101)	-0.287 *	(0.122)	-0.229	(0.145)	-0.248 *	(0.107)
Intercept	73.537 ***	(4.564)	66.414 ***	(3.754)	64.540 ***	(3.517)	67.979 ***	(4.752)	67.352 ***	(3.670)
Random Effects										
Intercept	3.738 ***	(0.901)	---	--	---	--	---	--	---	--
Serial Correlation and Residual Variation:										
Rho	0.846 ***	(0.063)	0.954 ***	(0.039)	0.962 ***	(0.040)	0.955 ***	(0.042)	0.948 ***	(0.043)
Gamma			0.684 ***	(0.109)	0.669 ***	(0.120)	0.676 ***	(0.114)	0.667 ***	(0.114)
Residual	2.581 ***	(0.262)	2.565 ***	(0.230)	2.554 ***	(0.237)	2.578 ***	(0.235)	2.588 ***	(0.234)
Proportion of Variance Explained	48.14%		48.44%		48.67%		48.19%		47.98%	
N	84		84		80		82		83	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-214.05		-210.78		-201.25		-206.75		-208.85	
Fixed Effect Parms	11		11		11		11		11	
Random/Serial/Residual Parms	3		3		3		3		3	
AIC	434.10		427.6		408.5		419.5		423.7	
BIC	436.10		429.5		410.5		421.4		425.6	

Note: Estimation method is REML
 * p < .05, ** p < .01, *** p < .001

Figure 6.14: Estimated Level of Occupational Gender Segregation Using the Family Allowances, Benefits, and Tax Credits Index
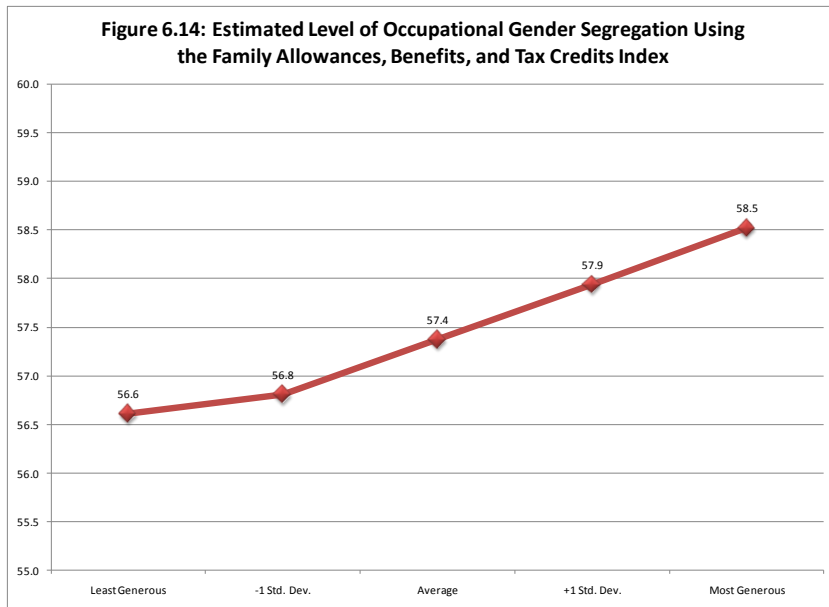
significant index is the family allowances and tax credits index, which is associated with higher levers of occupational gender segregation (Figure 6.14).

Table 6.24 presents summary estimates for mixed models disaggregating the various family policy indexes. I use summary fixed effects estimates here in order to reduce the number of tables. Flat-rate birth benefit and paid childcare leave (Figure 6.15) are both associated with higher levels of occupational gender segregation, likely because flat-rate birth benefits are more likely to exist in countries that favor more traditional divisions of labor, while childcare leaves are more likely to enforce a traditional division of labor. On

Figure 6.15: Estimated Level of Occupational Gender Segregation by Length of Childcare Leave
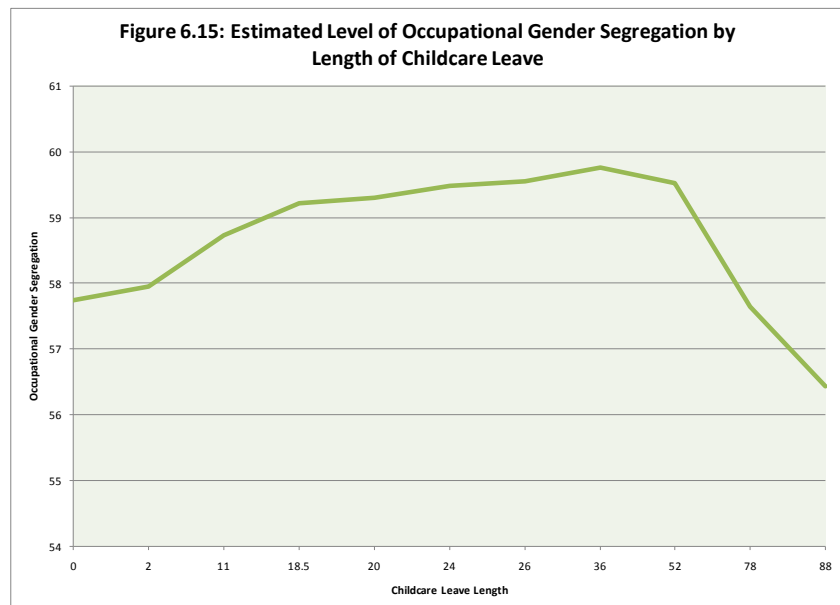
Table 6.24: Summary Fixed Effect Estimates for Disaggregated Family Policy Measures from Mixed Models Estimating Occupational Gender Segregation

	Panel A: Leaves, 2 Year Lag					
	Maternity Leave		Parental Leave		Child Care Leave	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Leave (In Weeks)	0.060	(0.165)	-0.071	(0.051)	0.105 *	(0.053)
Leave Squared	-0.002	(0.003)	0.001	(0.000)	-0.001 *	(0.001)
Leave Pay[a]	-0.006	(0.018)	--	--	2.708	(1.488)
Flat-Rate Birth Benefit	5.800 ***	(1.127)	--	--	--	--

	Panel B: Childcare, 2 Year Lag					
	Guarantees		Coverage			
Variable	Estimate	S.E.	Estimate	S.E.		
Childcare Ages 0-2	-0.084	(1.541)	-0.021	(0.053)	--	--
Childcare Ages 3-School Age	-2.577	(1.657)	-0.069 *	(0.032)	--	--

	Panel C: Expenditure, 2 Year Lag					
	Maternity and Parental Leaves		Childcare		Familly Allowances, Benefits	
Variable	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Expenditure	4.193	(2.848)	0.551	(1.832)	0.480	(0.993)
Childcare Tax Credits	--	--	--	--	0.841	(1.090)

Note: The following fixed effects are in the model but not shown in order to save space: employment in services, female average years of school, lagged real GDP, unemployment rate, left cabinent and corporatism scale, cumulative females in parliament, individual taxation, public sector employment, female share of the labor market, and time. Serial correlation structure is ARMA. There are no significant random effects.
a: Leave pay is measured as a percentage of wage replaced for maternity leave and as a indicator variable for child care leave
 * p < .05, ** p < .01, *** p < .001

the other hand, more extensive childcare coverage for children ages 3 to school age reduces occupational gender segregation, although the magnitude of this effect is not large.

My findings are in direct contrast to Mandel and Semyonov's (2005) findings that generous family policies increase occupational gender segregation. There could be a number of reasons for this difference in findings, including the fact that I use annual longitudinal aggregate data, while they use cross-sectional multi-level data. Our

measures of occupational gender segregation are also different; they use a measure similar to an index of dissimilarity, whereas I use a measure that is size-standardized. Finally, I utilize more complete measures of family policies, including multiple indexes and disaggregated indexes, where they measure family policies in a single index of maternity leave, childcare coverage, and public sector employment.

To summarize this section, generous parental leaves and childcare reduce the male-female wage gap by allowing women to maintain attachment to employment even when they have children, a period generally associated with declining employment and reduced labor market rewards. However, family policies that favor a more traditional division of labor, such as family allowances and support benefits, flat-rate birth benefits, and childcare leaves, increase the male-female wage gap and occupational gender segregation.

6.6 Conclusion

In this chapter, I conducted the empirical analysis that much of this dissertation has been building to, an analysis that investigates the role of family policies on the various measures of women's employment inequality that were described in detail in the previous chapters. Some of this analysis confirmed what has been found in previous analyses. However, much of this analysis, especially those related to hours of work and the gender pay gap have never been studied in detail in previous aggregate level analyses. Before describing the character of the analyses in this chapter, it is important to note that the "base" models established in Chapter 4 are not mediated by the inclusion of family

policies in this chapter. In other words, while the magnitude of some of the effects change when family policies are included in the analysis, these models do not provide evidence that family policies mediate the relationship between the labor market, traditional measures of the welfare state, and women's employment outcomes. Instead, family policies have independent effects on women's employment outcomes above and beyond those of the variables in the base model.

In this analysis, I measured the effect of family policies in multiple steps. The results of my analysis are summarized in Table 6.25. First, I investigated the impact of the relative generosity of family policies during a country-year using a single family policy generosity index. In this part of the analysis, I found that more generous family policies have little impact on rates of women's labor force participation, either overall or age-graded, with the exception of some random effects for labor force participation rate for women ages 25-34. However, I found that more generous parental leaves and childcare coverage decreased the male-female wage gap and women's share of part-time employment. On the other hand, high levels of the family allowances and tax credits index were associated with higher levels of occupational gender segregation. While useful, this overall generosity index blunts important distinctions in the role that different types of family policies play.

In the next part of the analysis, I investigated the impact of family policies on each of my measures of employment and employment inequality using both summary indexes for each type of family policy. In general, I found that policies that guarantee a woman's employment position while she cares for children (leaves) increased labor force

Table 6.25: Summarizing Family Policy Findings

Variable	Women's Employment Outcomes									
	Labor Force Participation Rates					Rates of Part-Time Employment	Share of Part-Time Employment	Share of Involuntary Part-Time Employment	Male-Female Wage Gap	Occ. Gender Segregation
	Overall	15-24	25-34	34-44	45-54					
Lag Structure	5 yrs.	5 yrs.	5 yrs.	5 yrs.	5 yrs.	2 yrs.	2 yrs.	2 yrs.	5 yrs.	2 yrs.
Broad Indexes										
Leaves and Childcare Index		R.E.						↓	↓	
Family Allowances and Tax Credits Index		R.E.								↑
Maternity and Parental Leaves										
Parental/Maternity Leave Index		R.E.	↑ R.E.						↓	
Maternity Leave Length	R.E.		↑ Curv.				↓	↓ Curv.	↓ Curv.	
Wage Replacement Rate							↓			
Flat-Rate Birth Benefit							↑		↑	
Parental Leave Length		↑ Curv.	↑ Curv.					↓ Curv.		
Childcare Leave Length			↑ Curv.	↑ Curv.	↑ Curv.					↑
Childcare Leave Pay			R.E.	↓	↓					
Expenditure on Maternity/Parental Leave						↓			↓ R.E.	
Childcare										
Child Care Ages 0-2 Index			↑				↓	↓	↓	
Guaranteed Slot for Child Ages 0-2	R.E.		↑			↓	↓	↓	↓	
Coverage for Children Ages 0-2			↑			↓	↓	↓	↓	
Child Care Ages 3-School Age Index								↓	↓	
Guaranteed Slot for Child 3-School Age								↓	↓	
Coverage for Children Ages 3-School Age						↓		↓	↓	↓
Expenditure on Childcare						↓	↓	↓	↓	
Family Allowances, Benefits, Credits										
Family Allowances, Benefits, Credits Index		↓								↑
Expenditure on Familly Allowances, Benefits								↑	↑	
Childcare Tax Credit									↓	

Notation: Blank Cell: No Significant Effect; ↑: Statistically Significant Increase; ↓ Statistically Significant Decrease; Curv: Curvilinear Effect of Leave; R.E.: Significant Random Effect, See Text for Description

participation rates among women ages 25-34 and reduced the male-female wage gap. Policies that relieved mothers of the need for full-time care for children (publicly funded childcare) increased labor force participation rates among women ages 25-44, decreased women's concentration in part-time employment and in involuntary part-time employment, and reduced the male-female wage gap. Childcare for infants and toddlers had the broadest and largest impact on these outcomes, with childcare for pre-school children have smaller magnitudes and only being significant for share of involuntary part-time employment and the male-female wage gap. Importantly, neither parental leaves nor childcare policies appeared to be strongly related to occupational gender segregation, as found in a previous study. On the other hand, family policies that were directed at maintaining a traditional family structure, were unevenly distributed across the population, or had little connection to employment (family allowances and support benefits) decreased labor force participation rates for women ages 25-34 and increased occupational gender segregation. However, even this more nuanced analysis using separate indexes hid important findings that only became clear after including detailed policy measures in the analysis.

I then disaggregated these indexes into their various components, focusing in particular on a) the effects of the various types of leaves, the length of the leave, and the wage replacement rate or leave pay, b) coverage of childcare and guaranteed slots for childcare for children of various ages, and c) whether a childcare tax credit is available and the level of expenditure on various family policies. Disaggregating these indexes in

this way is something that has rarely been done in previous aggregate level research and leads to many interesting findings.

A particularly important finding is that there were different effects for maternity and parental leaves in my analysis. Longer maternity leaves increased women's labor force participation rates for women ages 25-34, decreased share of part-time employment and share of involuntary part-time employment, and decreased the male-female wage gap. The wage replacement rate is only associated with one outcome: reduced concentration of women in part-time employment. Longer parental leaves were associated with higher rates of women's labor force participation rates for women ages 25-44, and decreased women's share of part-time employment.

The age-graded distinction makes sense given that parental leaves are much longer than, and taken after, maternity leaves. Longer maternity leaves and more highly paid maternity leaves, along with parental leaves, decreased women's concentration in part-time work. It appears that guaranteeing a woman's employment position while she cares for children is an important way to reduce inequality in hours of work between men and women.

The fact that maternity leaves, but not parental leaves, decreased the male-female wage gap is likely due to the fact that parental leaves tend to be long and low paid or even unpaid, whereas maternity leaves tend to be shorter and generally have fairly high wage replacement rates, replacing 64% of normal wages, on average. Finally, the fact that maternity leaves reduced involuntary part-time employment, while parental leaves did not, might indicate that maternity leaves of a moderate length, as theorized in the

literature, are just long enough to allow women to return to full-time work without being so long as to make it hard to find desirable hours of work upon return to the labor market. I broadly interpreted these findings to mean that, with the possible exception of women's share of involuntary part-time employment, longer maternity leaves would be more effective than the combination of a short maternity leave and a long, low paid, parental leaves, because maternity leaves are better compensated. The fact that longer and better paid maternity leaves reduce the male-female wage gap, whereas parental leaves do not, is supportive of this explanation.

As reported above, the finding that childcare leave positively influenced age-graded women's labor force participation rates is not consistent with expectations. While I expected that childcare leaves, due to their long duration and relatively low pay, would have neutral or negative effects on rates of women's labor force participation, the results revealed that childcare leaves up to a year in length have a positive impact on labor force participation rates for women ages 35-44 and 45-54. However, it is likely that women are combining childcare leaves with part-time employment of a few hours per week. This finding is reinforced by the finding that long childcare leaves increase women's rates of part-time employment. Finally, childcare leaves, as one would expect from very long, low-paid leaves, were associated with higher levels of occupational gender segregation.

As described in the previous chapter and above, guaranteed slots and coverage for children ages 0-2 is more consistently associated with labor force participation rates and reduced inequality in part-time work than childcare for children age 3 to school age.

However, childcare for children of all ages is associated with lower levels of involuntary part-time employment and, most importantly, lower levels of the male-female wage gap. While I expected this pattern of findings for younger children, because childcare for this age group is associated with both high levels of supply and demand for women's employment, I did not expect this pattern of findings for pre-school age children. These findings appeared to indicate that any childcare, even when implemented for a variety of reasons not having to do with women's labor force participation and structured in ways that do not explicitly support women's employment, is important for reducing inequality in men's and women's employment outcomes.

I expected that coverage would be much more tightly tied to positive employment outcomes for women than guaranteed slots, because coverage is the actual percentage of children in publicly funded childcare, whereas guaranteed slots are simply government promises that may or may not be true. However, both were strongly connected to women's employment inequality, although the magnitude of the coverage impact is usually stronger. This may mean that guarantees serve as important signals to women and families that the government is committed to equality in women's employment, as well as the fact that countries with such guarantees are likely to have other generous family policies.

Looking broadly at Table 6.25, it is clear that childcare is more consistently tied to reducing women's inequality in part-time work and wages than the various aspects of maternity and parental leaves were. Thus, policies that relieve mothers of the need for full-time care for children were more effective than policies that guarantee a woman's

employment position while she cares for children at increasing full-time employment, or at least voluntary part-time employment, and at reducing the wage gap between men and women.

As befitting the fact that family policy expenditure is often tied to generosity and coverage, high levels of expenditure on leaves were associated with lower rates of part-time employment and a smaller male-female wage gap, while high levels of expenditure on childcare were associated with lower rates and share of part-time employment, and lower rates of involuntary part-time employment among women, and a lower male-female wage gap. As expected, family allowances and support benefits were associated with lower levels of female labor force participation among women ages 25-34, as well as higher levels of women's share of involuntary part-time employment, the male-female wage gap, and occupational gender segregation. However, the disaggregation of the family allowances, support benefits, and tax credits index reveals that not all tax-based incentives for childbearing reduce women's employment equality. Instead, tax credits that helped families afford private childcare also helped reduce the male-female wage gap.

The analysis in this chapter provided tantalizing evidence that generous maternity and parental leaves and high levels of publicly funded childcare reduce employment inequality between men and women by increasing women's labor force participation rates, reducing inequalities in hours of work, and reducing the male-female pay gap. The finding for the pay gap is perhaps the most exciting, because in recent research much of

the pay gap across countries has been shown to be due to motherhood (Budig, Misra, and Boeckmann 2009).

Importantly, family policies appear to have many and varied positive effects, without also increasing occupational gender segregation. In the final and concluding chapter of this dissertation, I will discuss the weaknesses in this research, and will also expand on the implications of my findings for researchers and policymakers.

Chapter 7. Summary and Conclusions

Summary

I began this dissertation by arguing that women's employment and continued employment inequality has captured the attention of social scientists, welfare state researchers, and policymakers. In particular, social science research has developed two parallel theoretical and empirical literatures that explain these changes in women's employment outcomes at the aggregate level. These literatures are the interdisciplinary literature on the welfare state and social policy, and the sociological literature on changes in the economy, labor markets, sex segregation, and women's labor supply. I reviewed these literatures in the second chapter of this dissertation.

While complementary, these literatures frequently work without reference to each other. Research has independently shown that both labor market processes and welfare state policies and activities influence women's employment inequality. However, we know relatively little about how these parallel processes work in context with each other. In the fourth chapter, I worked to integrate these literatures by describing the primary labor market and welfare state factors that are frequently associated with women's employment outcomes in these literatures. In the analytical portion of chapter four, I used linear mixed models to assess the role of labor markets and welfare states on various measures of women's employment inequality. I described the dataset, variables, and methods used in chapter three.

My analysis of the labor market and welfare state factors that influence women's employment outcomes revealed that lagged employment in services was consistently

associated with women's employment outcomes, even when controlling for other labor market and welfare state factors. In particular, increasing employment in services was associated with increasing rates of female labor force participation across all age cohorts of women, although the effect was strongest for younger cohorts. I concluded from this that employment in services has increased the demand for women's labor, as predicted by existing evidence. However, high levels of employment in services was associated with high levels of employment inequality for women, including a larger share of part-time and involuntary part-time employment, a higher male-female wage gap, and higher levels of occupational gender segregation. Economic growth was associated with expanding employment opportunities in full-time work for women; however, economic growth did not influence women's wages or gender segregation.

I found that the welfare state influenced women's employment outcomes through the political environment, taxation, and direct employment. When left parties dominated the political context in a country, and there was a tight relationship between employers, employees, and the government, the male-female wage gap tended to be lower, and women were less likely to be working part-time involuntarily. The welfare state also influenced gender segregation through taxation policies, with individual taxation that did not penalize women for working when their spouse works being associated with more gender neutral labor markets. In addition, the welfare state directly influenced women's labor force participation rates through public sector employment levels. I also found that public sector jobs were clearly segregated by gender, but that this segregation was not

associated with a pay differential between men and women due to the compressed nature of wages in the public sector.

While useful for understanding the ways that labor market and welfare state factors combine to influence women's employment outcomes, the analysis in the fourth chapter ignored a special category of welfare state policies that provide useful insights into understanding these interrelationships. These policies are family policies, a subset of state social policies that, theoretically, mediate the relationship between the market and family, and allow men and women to engage in (or opt out of) care-taking responsibilities without losing their labor market position and rewards. Most family policies are targeted specifically at mothers and families with children, and so were theorized to reduce the inequality between men's and women's employment outcomes. The family policies I considered in this dissertation included parental leaves, publicly funded childcare, and family allowances, support benefits, and tax credits.

In the fifth chapter, I reviewed the historical development of and cross-national variation in these policies. I also reviewed the small, but growing, literature that empirically assesses the impact of family policies on women's employment inequality. The weight of the available evidence suggested that generous family policies increase the rates of female labor force participation, but these effects were highly contingent on the institutional, cultural, and labor market contexts in which women make decisions about employment. Unfortunately, because the existing evidence is weak for other areas of women's employment inequality, relatively little is known in the existing literature about

how family policies influence the hours of women's work or women's employment inequality in terms of wages or occupational gender segregation.

In the sixth chapter, I conducted an empirical analysis that investigated the role of family policies on the various measures of women's employment inequality used in the analysis in the fourth chapter. These models did not provide evidence that family policies mediate the relationship between the labor market, other welfare state activities and policies, and women's employment outcomes. Instead, family policies had independent effects above and beyond those of the variables in the models generated in chapter four.

I investigated the impact of family policies on women's employment inequality in three steps. First, I used two family policy generosity indexes to investigate the impact of relative generosity of family policies. I found that more generous parental leaves and childcare decreased the male-female wage gap and women's share of part-time employment, while high levels of the family allowances and tax credits index were associated with higher levels of occupational gender segregation.

Next, I investigated the impact of family policies on each of my measures of employment inequality using both summary indexes for each type of family policy (parental leaves, childcare for infants and toddlers, childcare for pre-school age children, and family allowances, benefits, and tax credits). I found that policies that guaranteed a woman's employment position while she cared for children increased labor force participation rates among women ages 25-34, and reduced the male-female wage gap. Policies that relieved mothers of the need for full-time care for children increased labor

force participation rates among women ages 25-44, decreased women's concentration in part-time employment and in involuntary part-time employment, and reduced the male-female wage gap. Childcare for pre-school children had smaller magnitudes than childcare for younger children, and was only significant for share of involuntary part-time employment and the male-female wage gap. Importantly, neither parental leaves nor childcare policies appeared to be strongly related to occupational gender segregation. On the other hand, family policies that were directed at maintaining a traditional family structure, were unevenly distributed across the population, or had little connection to employment, decreased labor force participation rates for women ages 25-34, and increased occupational gender segregation.

In the third step of the analysis, I disaggregated these indexes into their various components focusing on the various types and length of leave, coverage vs. guaranteed slots in childcare, and expenditure on family policies. Disaggregating these indexes in this way is something that has rarely been done in previous aggregate level research and led to many interesting findings. For example, I found that longer maternity leaves increased labor force participation rates for women ages 25-34, decreased the share of women in part-time employment and the share of involuntary part-time employment, and decreased the male-female wage gap. Longer parental leaves were associated with higher levels of labor force participation rates for women ages 25-44 and decreased women's share of part-time employment. I concluded that longer maternity leaves would be more effective at reducing employment inequality than the current combination of a short maternity leave and a long, low paid, parental leave that is available in many countries,

because maternity leaves are better compensated. I also concluded that child care leaves, a fairly new phenomenon in many countries, were generally associated with poor employment outcomes for most women because many combine them with part-time employment, which increases inequality in hours of work, and because childcare leaves were associated with higher levels of occupational gender segregation.

I found that childcare for children of all ages was associated with lower levels of the male-female wage gap and low levels of involuntary part-time employment among women, although childcare for the youngest children was more consistently associated with higher labor force participation rates. These findings indicated that high levels of publicly funded childcare, even when implemented for a variety of reasons not having to do with women's labor force participation, were important for reducing wage inequality between men and women. I found that both coverage and guaranteed slots were connected with lower levels of women's employment inequality. I broadly conclude from this analysis that policies that relieved mothers of the need for full-time care for children were more effective than policies than guaranteed a woman's employment position while she cared for children at both increasing full-time employment, or at least voluntary part-time employment, and reducing the wage gap between men and women.

While there are many ways that these findings were contingent on the institutional, cultural, and labor market contexts in which women make decisions about employment, the results from the analyses in the preceding chapters can be summed using the following key points. One, ongoing labor market processes, especially employment in services, not only increased women's labor force participation, but also

increased women's employment inequality in part-time and involuntary part-time work. This continued inequality in employment also led to an increase in the male-female wage gap, as well as increasing levels of occupational gender segregation. Two, family policies played a lesser role in women's labor force participation, but generous maternity and parental leaves and high levels of publicly funded childcare helped reduce societal levels of gender inequality in pay and part-time employment. These policies also did this without increasing the segregation of men and women into different jobs.

To answer the question posed in the title, women's employment inequality is caused by labor market factors but generous family policies can reduce that inequality. The research and analyses presented in this dissertation make several important contributions to the literature. First, the database that I compiled contained a longer time series and more comprehensive data than has been previously available. Second, my empirical methodology more accurately corrected for the non-independence of observations in pooled cross-sectional time-series data. Third, my methodology allowed me to assess which outcomes and variables had country specific slopes through the use of random effects. While I did not find many random effects in my analysis, they did provide a more nuanced view than was available through fixed effects alone for labor force participation and part-time employment rates. Fourth, I used a broader set of measures than has typically been done in analysis at the aggregate level. Finally, and most importantly, this research filled in some critical gaps in the literature on the effect of family policies on women's employment inequality, especially on hours of work, wages, and gender segregation.

Limitations

There were, of course, many limitations to this study that hindered my ability to make stronger conclusions. In terms of the specific weaknesses of my measures and analyses type, there were specific weaknesses that I tried to elucidate throughout, but that I will summarize here. To begin with, there were many ways in which my outcomes could have been better measured. My outcomes focused on women as a whole demographic group, whereas family policies should theoretically have a greater impact on just mothers. However, there was limited data available for mothers alone for many of the inequality measures.

In terms of particular outcomes, I would have been able to make stronger claims about part-time employment if I had used a common definition of part-time employment. However, doing so would have severely restricted my sample size, and there were generally not large differences between the two measures. My measure of the male-female wage gap likely conflated the difference in work hours with the wage gap. I indirectly corrected for this by including the proportion of women in part-time employment as an independent variable, however, a preferable measure would have examined the wage gap among full-time workers.

Finally, there were multiple issues with my measure of occupational gender segregation. Whereas I used the size standardized index of dissimilarity to maximize my sample size, I would have preferred to use the association index because it is margin-free, better captures prevailing conceptions of segregation, and is more comparable across countries and times. Moreover, the data used to calculate these indices are not strictly

281

comparable across countries or points in time, given differences regarding the sources of data collection, worker coverage, and national classifications used. In addition, there were large amounts of data missing on these measures. In sum, the results on the dependent variable of occupational gender segregation should be taken as tentative until better data is available.

In terms of the explanatory variables, they were generally well-measured, with a few exceptions. For example, I would have preferred to use a measure of employment in services in the private sector. However, a close investigation of the OECD version of this variable revealed substantial measurement error across countries and over time. Also, I would have preferred to use a taxation variable that measured the tax penalty associated with being in a dual-earner couple (as opposed to a single-earner married couple) over time, but that data is only available after 1997. In terms of the family policy variables, a more accurate measure of the impact of family allowances and tax credits would have been to find information on the actual payments, structure, and generosity of these family policies, as opposed to the expenditure measure I used. This information was available (Gauthier 2002), but was difficult to compare across countries. As a result, I decided to focus my data collection and analysis efforts on the leave and childcare measures because that is where the bulk of the literature is focused.

The analytical strategy I used was a good strategy for aggregate-level pooled cross-section time-series data, but there were a number of ways that I could have improved the analysis. In particular, while the focus on level, or relative generosity, was important, it would have been interesting to see the effect of short term changes in family

policies on changes in women's employment inequality. However, this is analysis I plan

to conduct in the future. I also could have done more to exploit the long time-series of

my dataset. For example, I could have seen whether the effects were the same across

welfare periods, or if generous family policies had a cumulative effect on women's

employment inequality above and beyond the lagged effect. Again, this is analysis I will

be conducting in the future.

The biggest limitation and weakness in my analysis had to do with the type of

data used. I used aggregate level data because it provided useful insights into the impact

of family policies on societal levels of inequality. However, analysis using this type of

data can tell us little about how family policies influence the labor market outcomes of

individual women.   Only by using individual level data can we assess the effect of

family policies on women's employment outcomes, both in the short term and over a

significant part of the life course. Additionally, only by using individual level data can

we assess the impact of family policies on women of different class backgrounds, in

different occupations, or in different family structures. Finally, individual level data is

the only way we can investigate how the institutional and labor market characteristics of

a given country interact with family policies to influence women's labor supply

decisions. All of these issues are more important than ever as welfare states and families

become increasingly reliant on women's labor force participation for their well-being.

These issues would ideally have been addressed by combining my dataset with

longitudinal panel data from various countries and using my modeling strategy of linear

mixed models, which can be easily adapted to the multilevel framework or other related

modeling strategies.   However, there are currently few datasets that have the type of

long-term panel data needed for this analysis, because they need to contain information

on the economic activity and personal income of respondents, be comparable across

countries, and cover a fairly long time-span. The best dataset available that meets these

criteria was the European Community Household Panel, which is a panel dataset with

sixty thousand households spanning 15 countries between1994 and 2001. However, even

this dataset was limited in time span, and did not include the U.S. In addition, this

dataset is reasonably difficult for U.S. researchers to access.

Barring access to individual panel data, a reasonable "middle-ground" strategy

would be to combine my existing dataset with Luxembourg Income Study (LIS) data.

The LIS contains six waves of harmonized microdata (about every five years from 1980

to 2004) from 30 countries, and includes information on household structure, socio-

economic status, income, and income structure.   A number of researchers have

productively linked their own family policy databases to one, and sometimes more,

waves of the LIS data (Gornick, Meyers, and Ross 1998; Korpi 2000; Pettit and Hooks

2005; Mandel and Semyonov 2005; Mandel and Semyonov 2006; Misra, Budig, and

Moller 2007; Misra, Moller, and Budig 2007; Budig, Misra, and Boeckmann 2009 Misra,

Budig, and Boeckmann 2010). I could contribute much to contribute to the literature

based on the LIS because my dataset covers a longer time span with a more complete

time-series than the datasets collected by other researchers. This allows me to assess the

cumulative effects of family policies, as well as changes in family policies on women's

employment outcomes.

Implications and Directions for Future Research

This dissertation provides strong evidence that ongoing labor market forces pull women into employment, but cause increased inequality between men and women in their employment outcomes. However, generous family policies can reduce employment inequality between men and women. In particular, generous maternity and parental leaves and, especially, high levels of publicly funded childcare, help reduce societal levels of gender inequality in pay and in part-time employment. They also do this without increasing the segregation of men and women into different jobs.

The main focus of this dissertation was an empirical analysis of data to see whether or not there was link between welfare state family policies and women's employment inequality at the aggregate level. However, in the midst of the complex analyses, it is easy to lose sight of the real women, men, and children who are affected by these policies. My research here has shown that there are many ways that family policies decrease inequality between women's and men's employment outcomes, which has significant and lasting effects on women, families, and the welfare state as a whole. Below, I turn to a discussion of how these important findings can be put into practice and applied by policymakers.

First, if policymakers want to reduce women's employment inequality, my findings suggest that longer maternity leaves would be more effective at reducing women's employment inequality than the current combination of a short maternity leave and a long, low paid, parental leave, because maternity leaves are better compensated.

However, childcare leaves are clearly ineffective at reducing women's employment inequality, and so should be cutback.

Second, both childcare coverage and guaranteed slots are important for reducing employment inequality. Guarantees serve as important signals to women and families that the government is committed to equality in women's employment, while coverage provides the actual benefits. Additionally, policies that relieve mothers of the need for full-time care for children are more effective at reducing the wage gap between men and women and increasing full-time employment than policies that guarantee a woman's employment position while she cares for children. Therefore, if there is a need to choose one to focus on, publicly funded childcare would likely be the most effective.

Finally, generous leaves and more extensive childcare can be seen as relatively inexpensive ways to reduce gender inequality in employment outcomes, with even the most generous leaves and childcare being cheaper than most countries spend in family allowances, support benefits, and tax credits combined. Moreover, my research indicates that effect of these policies does not appear to be strongly contingent on the political context in which they are passed.

Based on this research, countries like the U.S. and Canada, which have the least generous family policies, would stand to benefit the most from expanding these policies, specifically in lowering the wage gap and reducing women's concentration in part-time employment. In addition, they could do so with relatively little expense compared to other active labor market programs, such as increasing the size of the public sector.

Family policies help mothers and families to maintain attachment to the labor market while having and raising children, a time that is most strongly associated with gender inequality in employment (Budig and England 2001; Sigle-Rushton and Waldfogel 2007; Gangle and Ziefle 2009). Therefore, I believe that expanding family policies has a potential impact far beyond the impact on women's employment inequality alone. Because these policies reduce the wage-gap and women's concentration into part-time work, they, indirectly, have the potential to increase household incomes and reduce poverty, especially among single mothers and children (Esping-Andersen et. al. 2002). This is especially important because single mothers and children are not only the two largest groups living in poverty, but are also the most vulnerable to its effects.

In addition, publicly funded childcare and a strong focus on high quality care and preprimary education have been shown to have positive effects on children's early development (Waldfogel 2002). In terms of gender equality, if more men were to take them up, these family policies could help equalize household distributions of work, and lead to paid work and unpaid work being rewarded at more equal levels. Overall, these policies may have the potential to help families reduce work-family stress and conflict, and lead to a better quality of life for all families.

Reduced poverty and higher levels of employment also have obvious benefits for welfare states. Some research has found that generous family policies may increase fertility and decrease infant mortality, although there is limited evidence on this (Windgarden and Bracny 1995; Ferrarini 2003). In addition, having more people employed, and at higher levels of pay, broadens and increases the tax base from which

287

the state can collect revenue, and results in increases economic growth and buffers against recession (Hall and Soskice 2001).

There are many directions for policymakers and social scientists to take this research, and some very productive ones follow. I plan to strengthen the current research by working to rectify some of the limitations described above. I would also like to extend this research to study the impact of family policies on family incomes and inequality, child poverty, fertility, and infant mortality. I also plan to extend this research by connecting my dataset to the LIS data or the ECHP so that I can make stronger claims and assess how family policies influence women's and families work careers and trajectories, work-family conflicts, and women in various occupational situations. The ultimate long-term goal of family policy research should be to link the institutional characteristics of family policies with comparable individual level panel data. However, such a task is beyond the capability of any individual, and may well require a research team of scholars with knowledge in a variety of areas, including the specifics of family policy characteristics across countries, labor supply and demand researchers, survey methodologists, and quantitative methodologists. Clearly still much work to be done, not only in the process of researching family policies, but also in applying that research in order to make positive and lasting changes in the real lives of women, men, children, and families.

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Appendix 2: Available Family Policy Datasets

Longitudinal Databases

LIS Databases

      Two of the available longitudinal databases are tied to the Luxembourg Income Study, which contains six waves of harmonized microdata from 30 countries by 2004 with information on household structure, socio-economic status, income, and income structure. The six waves cover the following time periods: wave 1 around 1980, wave 2 around 1985, wave 3 around 1990, wave 4 around 1995, wave 5 around 2000, and wave 6 around 2004. See www.lisproject.org for more information.

      The first, more widely used, database describes policies to reconcile work and family as observed in 14 countries in the mid-1980s. That database was used by Gornick, Meyers and Ross (1997) to compare support for working mothers. There is an update of the first one to the early 2000s in 12 countries (covering pretty much the same countries as my database). It contains much more detailed information about parental leave, child care attendance and a special module on work-time legislation. Gornick and Meyers (2003) used these data. This database can be found at: www.lisproject.org/publications/fampol/fampolaccess.htm. The main weakness of this dataset, at least in my experience, is that it is difficult to replicate the data reported in the dataset using their cited sources.

      The second database is the NSF funded UMass Welfare State Work-Family Policy Indicators Database collected by Joya Misra, Michelle Budig, and their graduate assistant, Irene Boeckmann. This dataset covers family leave policies, childcare coverage, working time regulations, school scheduling indicators, and tax policies. The database consolidates information from numerous sources, including existing policy databases listed here. Their database includes multiple time points for 22 countries: Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, Germany (East and West), Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Poland, Russia, the Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom, and the United States. They match their policy measures to the LIS survey year for each country, generally lagging the measurement of the policies to two years prior to the survey year. This database is not yet publicly available, because data collection efforts are still ongoing and the principal investigators are just beginning to publish from the data.

Gauthier Family Policy Database

      Ann Gauthier at the University of Calgary has also set up a comparative database that includes information about cash benefits, the associated public spending, parental leave, and population and employment trends. This database can be found at (http://www.soci.ucalgary.ca/FYPP). The database covers the 22 OECD countries covered in the Misra et. al. database and is an annual time series database from 1970 to 2002. There are really two databases. The first focuses on cash benefits, including family allowances and tax relief for children. The database also contains limited data on preprimary education. The second database focuses on maternity, parental, and childcare

leave and benefits. The two primary weaknesses of this database are the very limited information on publicly funded childcare, which only contains coverage for children under age 5, and limited information on parental leaves.

MZES Family Policy Database

The MZES Family Policy database includes detailed information on case benefits for families, lone parents, and some limited information on childcare services. The database covers all EU countries plus Norway and Poland from the 1960s to the mid-1990s. The core of the database provides in the information standardized form across all countries included. The time series' include data on beneficiaries, benefit rates, service supply (offer), expenditure, and receipts for each individual family policy measure at the lowest possible aggregation level. It covers family policies from their origins or from when data are available up to the end of the database. The main weakness of this database are the limited information on leaves and childcare coverage and the fact that it only covers the EU countries.

Cross-Sectional Databases

OECD Family Database

The single database with the most comprehensive set of data is the new OECD family policy database, which covers all OECD countries at a single point in time (2004-2007, depending on the country and variable). It contains detailed demographic data as well as family policy indicators, which allows comparisons of different configurations of family policies, their context and their outcomes. In particular, the indicators make it possible to compare policies on parental leave, child care and education facilities and family policy expenditure across OECD countries. The database also contains information on the structure of families, including family size, composition, living arrangements, fertility indicators such as fertility rates among married and single women, and rates of marriage and cohabitation. Detailed information on the labor market position of families is also available, including information on maternal employment, gender pay gaps, gender differences in work hours, and time use patterns. Finally, the database contains information on child outcomes, including child health, child poverty, and education and literacy rates. This database can be found at: *www.oecd.org/els/social/family/database.*

The Clearinghouse Database

The website of the Clearinghouse on International Developments in Child, Youth and Family Policies at Columbia University (http://childpolicyintl.org/) contains information on benefits and services for families in 23 industrialized countries, including information on leaves, publicly funded childcare and early education, school policies, youth policies, family allowances, support benefits, tax benefits, and other income transfers. There are also data on population trends, employment trends, social expenditures, and social indicators, including child outcomes, health, and poverty. The main limitation to this dataset is that the available data covers different years, depending

on the piece of information, generally ranging from 1990 to 2002. Moreover, the website has not been update since 2005.

Generations and Gender Programme Contextual Database

The Generations and Gender Programme, under the United Nations Economic Commission for Europe, has created a contextual database with a set of detailed information about the economic and institutional context to use with individual level datasets. The information gathered covers demographic and economic contexts, the labor market, family policies, including support for child care or care for elderly dependents, the tax system and the pension system. More qualitative information on political systems is provided as well. The advantage of this context database is that it contains detailed information at regional level, permitting HLM analysis
However, the number of countries covered by the database is limited and only includes Bulgaria, Georgia, Hungary, Lithuania, Poland, Norway, Romania, Russia and France in 2008.

Appendix 3: Comparison of Part-Time Employment Definitions in 14 Welfare States in 2005

| | Part-time Employment as a Proportion of Total Employment | | | | | | Women's Share of Part-Time Employment | | |
| | Total | | | Women | | | | | |
Country	Common Def.	Country Def.	Diff.	Common Def.	Country Def.	Diff.	Common Def.	Country Def.	Diff.
Austria	21.1%	16.0%	-5.2%	39.3%	29.4%	-9.9%	84.1%	84.4%	0.3%
Belgium	21.9%	18.5%	-3.4%	40.7%	33.4%	-7.3%	81.9%	81.7%	-0.2%
Canada	18.3%	18.3%	0.0%	26.8%	26.9%	0.0%	68.6%	68.6%	0.0%
Denmark	22.0%	17.6%	-4.4%	32.7%	24.4%	-8.3%	68.6%	63.8%	-4.8%
Finland	13.7%	11.2%	-2.5%	18.6%	14.8%	-3.8%	65.3%	63.6%	-1.7%
France	17.1%	13.4%	-3.6%	30.2%	23.0%	-7.2%	81.8%	79.2%	-2.6%
Germany	24.1%	21.8%	-2.4%	43.9%	39.4%	-4.5%	82.7%	81.4%	-1.3%
Ireland	17.3%	19.6%	2.3%	33.1%	35.0%	1.9%	79.0%	80.2%	1.2%
Italy	13.0%	14.6%	1.6%	25.6%	29.2%	3.5%	78.1%	79.0%	0.9%
The Netherlands	34.9%	36.1%	1.2%	60.7%	60.0%	-0.6%	77.2%	75.4%	-1.9%
Norway	26.5%	20.8%	-5.8%	42.6%	32.9%	-9.7%	75.5%	74.6%	-0.9%
Sweden	23.2%	13.5%	-9.6%	36.0%	19.0%	-17.0%	74.3%	67.1%	-7.2%
United Kingdom	25.5%	23.4%	-2.1%	43.0%	39.1%	-3.9%	77.7%	77.4%	-0.2%
United States	17.4%	12.8%	-4.6%	25.2%	18.3%	-7.0%	67.2%	68.4%	1.3%
Mean	21.2%	18.4%	-2.7%	35.6%	30.3%	-5.3%	75.9%	74.6%	-1.2%

OECD Employment and Labour Force Statistics Database 2009

Appendix 4: Calculating Occupational Gender Segregation Indices

An important measure of women's employment inequality is occupational gender segregation, or the extent to which men and women hold different jobs. There are three standard summary indices of occupational gender segregation in use in the literature: D, D_s, and A. This appendix describe how these three indices are calculated.

The index of dissimilarity, or D, is the most widely used measure of segregation. The formula for D is as follows:

$$D = \sum_{j=1}^{j} \left| (F_j/F) - (M_j/M) \right| \times 100 \times \frac{1}{2} \qquad (1)$$

where J refers to the total number of occupations, M_j and F_j refer to the number of men and women in the jth occupation, and M and F refer to the number of men and women in the labor force as a whole. D can be interpreted as the percentage of men or women that would have to be removed from the labor force to bring about a perfect correspondence between the sex composition of each occupation and that of the entire labor force, effectively comparing the existing distribution to a perfectly gender neutral one (Charles and Grusky 2004). While widely used, and easy to calculate, D has been widely criticized for being sensitive to cross-national and historical variability in the relative size of occupational categories (and hence, is not margin free) (Charles 1992, Charles and Grusky 1995).

In order to eliminate the marginal dependence of the index of dissimilarity, researchers constructed the size-standardized index of dissimilarity (D_s). The formula for D_s is:

$$D_s = \sum_{j=1}^{J} \left\| \left[\left(\frac{F_j}{M_j + F_j} \right) \middle/ \sum_{j=1}^{J} \left(\frac{F_j}{M_j + F_j} \right) \right] - \left[\left(\frac{M_j}{M_j + F_j} \right) \middle/ \sum_{j=1}^{J} \left(\frac{M_j}{M_j + F_j} \right) \right] \right\| \times 100 \times \frac{1}{2} \quad (2)$$

with all terms defined and interpreted in the same way as before. While this reformulation eliminates a dependence on the occupational distribution, it adds a new dependence on the gender distribution, such that its value can change when rates of female labor force participation change, and so is still not margin-free (Charles and Grusky 1995, 2004).

Charles and Grusky (1995, 2004) propose a new index, the association index, A, that is margin-free, better captures prevailing conceptions of segregation, and is comparable across countries and times. The formula for A is:

$$A = \exp \left(1 \middle/ J \times \sum_{j=1}^{J} \left\{ ln(F_j/M_j) - [1/J] \times \sum_{j=1}^{J} ln(F_j/M_j) \right\}^2 \right)^{1/2} \qquad (3)$$

with all terms defined as before. The value of A expresses the extent to which occupation specific sex ratios deviate from the mean of such ratios calculated across all occupations. When the exponent of A is taken, as it is here, the resulting value can be interpreted as the multiplicative factor by which females are, on average, overrepresented in the

occupational categories being analyzed. A equals 0 and exp(A) equals one when the labor market is perfectly integrated.

Appendix 5: The Employment Endogeneity Trap

I am measuring the impact of employment in the services and public sector on women's employment outcomes. This leads to an endogeneity trap in my analyses because these variables have components of the women's labor force participation and part-time employment variables in them. The solution to this trap is to use one-year lagged versions of employment in services and public sector employment, as detailed in the text. In this appendix, I demonstrate that this trap exists and the solution for it. Below, I demonstrate this endogeneity trap with public sector employment as the independent variable and female labor force participation rates as the dependent variable. This can easily be extended to employment in services and the other employment-rate based dependent variables[39].

Let Y be the rate of female labor force participation and X be the public sector employment rate. Y can be written as a sum of two components, the public sector specific component and the non-public (private) sector specific component: $Y = \left(\frac{\text{\# of Females in Private Sector}}{\text{\# of Females Ages } 15-64}\right) + \left(\frac{\text{\# of Females in Public Sector}}{\text{\# of Females Ages } 15-64}\right)$. X can be written as the sum of male and female components:

$X = \left(\frac{\text{\# of Females in Public Sector}}{\text{\# of Females Ages } 15-64}\right) + \left(\frac{\text{\# of Males in Public Sector}}{\text{\# of Males Ages } 15-64}\right)$.

Letting $Y_a = \left(\frac{\text{\# of Females in Private Sector}}{\text{\# of Females Ages } 15-64}\right)$ and $Y_b = \left(\frac{\text{\# of Females in Public Sector}}{\text{\# of Females Ages } 15-64}\right)$, we can see that X contains Y from: $X = \left(\frac{\text{\# of Males in Public Sector}}{\text{\# of Males Ages } 15-64}\right) + Y - Y_a$. Thus, X is an endogenous regressor and the errors are necessarily correlated with the mean structure. This means that any estimates of the impact of public sector employment on women's labor force participation is biased and probably substantially so.

There are three solutions to this problem related to sample size, correlations, and lagged variables. First, the bias will be trivial if the sample size is large enough because the corrected sum of squares of X grows sufficiently large to outstrip the correlation issue. Second, if the correlations between the Y and X can be shown to be close to zero, then the bias will be trivial. Neither of these solutions are available in my case because of my limited sample size (686 at the most) and that correlations are relatively large between these variables. Third, using one-year lags for the X variables will limit the impact of the endogeneity issue and produce unbiased estimates of the impact of employment in services and public sector employment in women's employment outcomes. This third strategy is the one that I adopt in my analytical models.

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[39] The statistical description is adapted from Scott Eliason's feedback to a previous dissertation draft.

Appendix 6: Assessing the Lag Structure for Various Family Policy Indexes

Panel A: Female Labor Force Participation Rates

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-2498.04	3	1	5002.08	5015.09	-2334.97	3	1	4675.95	4689.15	-2460.03	3	1	4926.07	4939.37	-2510.11	3	1	5026.22	5039.55
One-Year Lag	-2516.29	3	1	5038.58	5051.62	-2333.97	3	1	4673.95	4687.15	-2459.70	3	1	4925.40	4938.70	-2508.02	3	1	5022.04	5035.37
Two-Year Lag	-2534.35	3	1	5074.70	5087.76	-2333.59	3	1	4673.19	4686.39	-2459.70	3	1	4925.41	4938.70	-2506.21	3	1	5018.42	5031.76
Three-Year Lag	-2551.85	3	1	5109.71	5122.80	-2333.22	3	1	4672.44	4685.64	-2459.50	3	1	4924.99	4938.29	-2504.22	3	1	5014.44	5027.77
Four-Year Lag	-2509.11	3	1	5024.23	5037.27	-2276.11	3	1	4558.22	4571.35	-2402.99	3	1	4811.98	4825.21	-2444.02	3	1	4894.04	4907.31
Five-Year Lag	**-2466.21**	**3**	**1**	**4938.42**	**4951.41**	**-2219.03**	**3**	**1**	**4444.06**	**4457.12**	**-2346.43**	**3**	**1**	**4698.85**	**4712.01**	**-2384.31**	**3**	**1**	**4774.62**	**4787.81**

Panel B: Female Part-Time Employment Rates

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-1871.11	3	1	3748.21	3760.69	-1788.03	3	1	3582.05	3594.39	-1806.99	3	1	3619.99	3632.36	-1830.42	3	1	3666.84	3679.23
One-Year Lag	**-1821.13**	**3**	**1**	**3648.26**	**3660.65**	**-1741.57**	**3**	**1**	**3489.14**	**3501.40**	**-1760.55**	**3**	**1**	**3527.09**	**3539.39**	**-1778.71**	**3**	**1**	**3563.42**	**3575.73**
Two-Year Lag	-1920.89	3	1	3847.79	3860.34	-1834.14	3	1	3674.29	3686.71	-1853.10	3	1	3712.19	3724.64	-1881.59	3	1	3769.18	3781.65
Three-Year Lag	-1971.24	3	1	3948.49	3961.12	-1880.09	3	1	3766.17	3778.67	-1899.08	3	1	3804.15	3816.68	-1932.31	3	1	3870.62	3883.18
Four-Year Lag	-1968.15	3	1	3942.30	3954.93	-1867.36	3	1	3740.73	3753.20	-1890.65	3	1	3787.29	3799.81	-1928.73	3	1	3863.46	3876.02
Five-Year Lag	-1965.06	3	1	3936.12	3948.74	-1854.49	3	1	3714.98	3727.44	-1882.17	3	1	3770.34	3782.85	-1925.19	3	1	3856.37	3868.92

Panel C: Female Share of Part-Time Employment

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-1619.18	3	1	3244.35	3256.82	-1607.64	3	1	3221.27	3233.61	-1598.27	3	1	3202.54	3214.91	-1623.80	3	1	3253.59	3265.99
One-Year Lag	**-1576.44**	**3**	**1**	**3158.88**	**3171.27**	**-1568.20**	**3**	**1**	**3142.40**	**3154.66**	**-1556.52**	**3**	**1**	**3119.95**	**3132.24**	**-1581.02**	**3**	**1**	**3168.04**	**3180.35**
Two-Year Lag	-1661.66	3	1	3329.31	3341.86	-1646.73	3	1	3299.46	3311.88	-1638.93	3	1	3283.85	3296.31	-1666.20	3	1	3338.39	3350.87
Three-Year Lag	-1705.53	3	1	3417.06	3429.69	-1685.95	3	1	3377.89	3390.39	-1679.90	3	1	3365.81	3378.34	-1709.42	3	1	3424.85	3437.41
Four-Year Lag	-1704.53	3	1	3415.06	3427.68	-1675.72	3	1	3357.45	3369.93	-1673.48	3	1	3352.97	3365.48	-1706.20	3	1	3418.40	3430.95
Five-Year Lag	-1703.19	3	1	3412.38	3425.00	-1665.34	3	1	3336.67	3349.12	-1666.85	3	1	3339.70	3352.20	-1703.62	3	1	3413.25	3425.79

Panel D: Female Share of Involuntary PT Emp.

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-1066.58	3	1	2139.16	2150.16	-1054.33	3	1	2114.67	2125.66	-1070.89	3	1	2147.77	2158.77	-1051.00	3	1	2108.01	2118.96
One-Year Lag	**-1017.86**	**3**	**1**	**2041.73**	**2052.58**	**-1004.37**	**3**	**1**	**2014.73**	**2025.58**	**-1020.61**	**3**	**1**	**2047.22**	**2058.07**	**-999.93**	**3**	**1**	**2005.87**	**2016.66**
Two-Year Lag	-1114.49	3	1	2234.99	2246.13	-1099.55	3	1	2205.10	2216.23	-1116.70	3	1	2239.40	2250.53	-1099.13	3	1	2204.26	2215.35
Three-Year Lag	-1162.28	3	1	2330.56	2341.84	-1146.72	3	1	2299.44	2310.70	-1163.78	3	1	2333.56	2344.82	-1147.67	3	1	2301.35	2312.56
Four-Year Lag	-1160.30	3	1	2326.61	2337.88	-1142.30	3	1	2290.60	2301.85	-1163.33	3	1	2332.66	2343.91	-1148.07	3	1	2302.13	2313.34
Five-Year Lag	-1158.82	3	1	2323.64	2334.92	-1134.60	3	1	2275.19	2286.42	-1159.03	3	1	2324.05	2335.30	-1147.56	3	1	2301.13	2312.34

Panel E: Male-Female Wage Gap

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-1909.61	3	1	3825.23	3838.31	-1662.86	3	1	3331.72	3344.57	-1846.46	3	1	3698.93	3711.89	-1983.08	3	1	3972.17	3985.17
One-Year Lag	-1918.98	3	1	3843.96	3857.06	-1671.87	3	1	3349.74	3362.61	-1852.82	3	1	3711.64	3724.61	-1988.80	3	1	3983.59	3996.61
Two-Year Lag	-1928.93	3	1	3863.86	3876.97	-1680.04	3	1	3366.09	3378.97	-1858.10	3	1	3722.20	3735.20	-1994.51	3	1	3995.03	4008.06
Three-Year Lag	-1935.99	3	1	3877.98	3891.10	-1684.54	3	1	3375.07	3387.97	-1860.27	3	1	3726.53	3739.54	-1997.29	3	1	4000.59	4013.63
Four-Year Lag	-1901.36	3	1	3808.73	3821.80	-1651.93	3	1	3309.86	3322.70	-1823.59	3	1	3653.17	3666.12	-1958.41	3	1	3922.81	3935.81
Five-Year Lag	**-1866.23**	**3**	**1**	**3738.46**	**3751.47**	**-1619.94**	**3**	**1**	**3245.87**	**3258.66**	**-1787.14**	**3**	**1**	**3580.28**	**3593.18**	**-1920.24**	**3**	**1**	**3846.47**	**3859.41**

Appendix 6, Cont'd: Assessing the Lag Structure for Various Family Policy Indexes

Panel F: Size-Standardized Index of Dissimilarity

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Parms.	# of Residual Parms.	AIC	BIC
No Lag	-217.02	3	1	440.04	446.87	-209.02	3	1	424.05	430.79	-209.85	3	1	425.70	432.49	**-214.20**	**3**	**1**	**434.40**	**441.19**
One-Year Lag	**-216.15**	**3**	**1**	**438.30**	**445.13**	**-206.42**	**3**	**1**	**418.85**	**425.55**	**-207.20**	**3**	**1**	**420.41**	**427.15**	-214.90	3	1	435.80	442.59
Two-Year Lag	-250.01	3	1	506.02	513.31	-236.17	3	1	478.35	485.50	-241.07	3	1	488.14	495.36	-248.82	3	1	503.64	510.89
Three-Year Lag	-249.79	3	1	505.57	512.86	-233.81	3	1	473.63	480.73	-239.16	3	1	484.33	491.51	-243.67	3	1	493.34	500.52
Four-Year Lag	-249.59	3	1	505.18	512.47	-233.94	3	1	473.87	480.98	-239.63	3	1	485.27	492.45	-243.69	3	1	493.38	500.56
Five-Year Lag	-248.57	3	1	503.14	510.44	-236.44	3	1	478.88	486.03	-242.20	3	1	490.41	497.63	-249.04	3	1	504.07	511.33

Panel G: Female Labor Force Participation Rates, Ages 15-24

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
No Lag	-2187.14	3	1	4380.27	4393.28	-2043.14	3	1	4092.29	4105.07	-2104.45	3	1	4214.89	4227.78	-2126.27	3	1	4258.54	4271.49
One-Year Lag	-2208.34	3	1	4422.68	4435.72	-2065.84	3	1	4137.69	4150.50	-2126.04	3	1	4258.08	4271.00	-2144.62	3	1	4295.24	4308.20
Two-Year Lag	-2230.11	3	1	4466.22	4479.29	-2088.98	3	1	4183.96	4196.79	-2148.79	3	1	4303.58	4316.53	-2164.46	3	1	4334.92	4347.91
Three-Year Lag	-2253.00	3	1	4511.99	4525.08	-2113.00	3	1	4232.01	4244.87	-2172.48	3	1	4350.96	4363.93	-2189.45	3	1	4384.89	4397.91
Four-Year Lag	-2218.00	3	1	4442.00	4455.04	-2079.05	3	1	4164.10	4176.92	-2138.49	3	1	4282.98	4295.91	-2156.98	3	1	4319.97	4332.94
Five-Year Lag	**-2183.20**	**3**	**1**	**4372.40**	**4385.40**	**-2045.30**	**3**	**1**	**4096.59**	**4109.36**	**-2104.49**	**3**	**1**	**4214.99**	**4227.86**	**-2124.39**	**3**	**1**	**4254.78**	**4267.70**

Panel H: Female Labor Force Participation Rates, Ages 25-34

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
No Lag	-2352.88	3	1	4711.76	4724.77	-2119.41	3	1	4244.82	4257.60	-2244.82	3	1	4495.64	4508.53	-2335.13	3	1	4676.26	4689.21
One-Year Lag	-2364.08	3	1	4734.15	4747.19	-2127.24	3	1	4260.55	4273.36	-2257.78	3	1	4521.55	4534.47	-2343.51	3	1	4693.03	4706.00
Two-Year Lag	-2373.23	3	1	4752.45	4765.52	-2134.60	3	1	4275.20	4288.04	-2268.94	3	1	4543.87	4556.82	-2349.98	3	1	4705.97	4718.95
Three-Year Lag	-2379.39	3	1	4764.77	4777.86	-2141.21	3	1	4288.41	4301.27	-2277.06	3	1	4560.12	4573.10	-2357.69	3	1	4721.39	4734.40
Four-Year Lag	-2330.80	3	1	4667.60	4680.64	-2092.72	3	1	4191.45	4204.26	-2230.83	3	1	4467.65	4480.58	-2307.91	3	1	4621.82	4634.79
Five-Year Lag	**-2281.57**	**3**	**1**	**4569.14**	**4582.13**	**-2044.04**	**3**	**1**	**4094.08**	**4106.84**	**-2184.55**	**3**	**1**	**4375.09**	**4387.97**	**-2258.63**	**3**	**1**	**4523.27**	**4536.19**

Panel I: Female Labor Force Participation Rates, Ages 35-44

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
No Lag	-2454.51	3	1	4915.01	4928.02	-2221.89	3	1	4449.78	4462.56	-2355.95	3	1	4717.90	4730.79	-2430.07	3	1	4866.13	4879.08
One-Year Lag	-2468.16	3	1	4942.33	4955.36	-2234.75	3	1	4475.50	4488.16	-2371.41	3	1	4748.82	4761.74	-2440.49	3	1	4886.97	4899.94
Two-Year Lag	-2481.32	3	1	4968.63	4981.70	-2247.11	3	1	4500.21	4513.05	-2385.99	3	1	4777.98	4790.92	-2450.45	3	1	4906.89	4919.88
Three-Year Lag	-2493.48	3	1	4992.97	5006.05	-2258.42	3	1	4522.84	4535.71	-2400.30	3	1	4806.61	4819.58	-2463.92	3	1	4933.84	4946.86
Four-Year Lag	-2448.40	3	1	4902.79	4915.84	-2212.98	3	1	4431.95	4444.77	-2357.73	3	1	4721.46	4734.38	-2417.73	3	1	4841.47	4854.44
Five-Year Lag	**-2403.28**	**3**	**1**	**4812.57**	**4825.56**	**-2167.29**	**3**	**1**	**4340.59**	**4353.35**	**-2315.24**	**3**	**1**	**4636.49**	**4649.36**	**-2372.40**	**3**	**1**	**4750.81**	**4763.72**

Panel J: Female Labor Force Participation Rates, Ages 45-54

Lag	Parental Leave Index					Child Care Ages 0-2 Index					C.C. Ages 3-School Age Index					Family Allowances, Benefits, Credits Index				
No Lag	-2498.04	3	1	5002.08	5015.09	-2292.33	3	1	4590.67	4603.45	-2410.40	3	1	4826.80	4839.69	-2473.60	3	1	4953.21	4966.16
One-Year Lag	-2516.29	3	1	5038.58	5051.62	-2311.18	3	1	4628.35	4641.16	-2429.74	3	1	4865.49	4878.40	-2487.82	3	1	4981.63	4994.60
Two-Year Lag	-2534.35	3	1	5074.70	5087.76	-2329.88	3	1	4665.76	4678.60	-2448.96	3	1	4903.92	4916.87	-2501.74	3	1	5009.48	5022.47
Three-Year Lag	-2551.85	3	1	5109.71	5122.80	-2348.06	3	1	4702.11	4714.98	-2467.95	3	1	4941.89	4954.87	-2519.57	3	1	5045.14	5058.16
Four-Year Lag	-2509.11	3	1	5024.23	5037.27	-2305.51	3	1	4617.01	4629.83	-2426.67	3	1	4859.35	4872.27	-2475.53	3	1	4957.06	4970.03
Five-Year Lag	**-2466.21**	**3**	**1**	**4938.42**	**4951.41**	**-2263.03**	**3**	**1**	**4532.06**	**4544.82**	**-2385.58**	**3**	**1**	**4777.16**	**4790.03**	**-2432.27**	**3**	**1**	**4870.54**	**4883.46**

Note: Smaller values of AIC and BIC indicate a better fitting model; models in bold are the selected models. Estimation Method is ML.

Variables:	Employment in Services	Female Avg. Years of School	Unemployment Rate	Real GDP	Left. Cab & Corp. Scale	Cum. Females in Par.	Individual Taxation	Public Sector Employment	Parental Leave Index	Child Care Ages 0-2 Index	C.C. Ages 3-School Age Index	Family Allowances Index	Time
Employment in Services	--	0.826	0.205	0.803	0.203	0.425	0.388	0.705	0.203	0.343	0.289	0.261	0.716
Female Avg. Years of School	0.826	--	0.300	0.691	0.006	0.277	0.124	0.497	-0.042	0.082	-0.018	0.358	0.553
Unemployment Rate	0.205	0.300	--	0.290	-0.219	0.015	0.096	0.057	0.117	0.090	0.102	0.362	0.501
Real GDP	0.803	0.691	0.290	--	0.136	0.306	0.323	0.361	0.236	0.172	0.288	0.472	0.886
Left. Cab & Corp. Scale	0.203	0.006	-0.219	0.136	--	0.764	0.335	0.453	0.559	0.577	0.563	-0.074	0.154
Cum. Females in Par.	0.425	0.277	0.015	0.306	0.764	--	0.431	0.542	0.491	0.631	0.465	-0.135	0.366
Individual Taxation	0.388	0.124	0.096	0.323	0.335	0.431	--	0.414	0.278	0.392	0.329	-0.063	0.387
Public Sector Employment	0.705	0.497	0.057	0.361	0.453	0.542	0.414	--	0.385	0.625	0.419	-0.019	0.369
Parental Leave Index	0.203	-0.042	0.117	0.236	0.559	0.491	0.278	0.385	--	0.588	0.675	0.118	0.417
Child Care Ages 0-2 Index	0.343	0.082	0.090	0.172	0.577	0.631	0.392	0.625	0.588	--	0.842	-0.085	0.294
C.C. Ages 3-School Age Index	0.289	-0.018	0.102	0.288	0.563	0.465	0.329	0.419	0.675	0.842	--	0.063	0.449
Family Allowances Index	0.261	0.358	0.362	0.472	-0.074	-0.135	-0.063	-0.019	0.118	-0.085	0.063	--	0.398
Time	0.716	0.553	0.501	0.886	0.154	0.366	0.387	0.369	0.417	0.294	0.449	0.398	--

Appendix 8: Correlation Matrix of Family Policy Indexes

Variables:	Parental Leave Index	Child Care Ages 0-2 Index	C.C. Ages 3-School Age Index	Family Allowances Index	Time
Parental Leave Index	--	0.588	0.675	0.118	0.417
Child Care Ages 0-2 Index	0.588	--	0.842	-0.085	0.294
C.C. Ages 3-School Age Index	0.675	0.842	--	0.063	0.449
Family Allowances Index	0.118	-0.085	0.063	--	0.398
Time	0.417	0.294	0.449	0.398	--

Appendix 9: Correlation Matrix of Dissagregated Family Policy Variables

Variables:	Maternity Leave Length	Wage Replacement Rate	Flat-Rate Leave Pay	Parental Leave Length	Child Care Leave Length	Child Care Leave Pay	Guaranteed Child Care for Ages 0-2	Guaranteed Child Care for Ages 3-School Age	Coverage of Child Care for Ages 0-2	Coverage of Child Care for Ages 3-School Age	Public Expenditure on Leaves	Public Expenditure on Child Care	Public Expenditure on Family Allowances	Child Care Tax Relief	Time
Maternity Leave Length	--	0.520	-0.195	0.065	0.600	-0.090	0.443	0.375	0.789	0.395	0.699	0.727	0.113	-0.376	0.381
Wage Replacement Rate	0.520	--	0.208	0.358	0.451	0.220	0.305	0.699	0.422	0.753	0.446	0.474	0.514	-0.136	0.573
Flat-Rate Leave Pay	-0.195	0.208	--	0.306	0.075	0.298	0.074	0.314	-0.183	0.202	0.064	-0.125	0.498	0.108	0.008
Parenal Leave Length	0.065	0.358	0.306	--	-0.038	-0.152	0.088	0.331	0.041	0.380	0.157	0.134	0.070	0.232	0.257
Child Care Leave Length	0.600	0.451	0.075	-0.038	--	0.417	0.182	0.375	0.537	0.360	0.498	0.437	0.500	0.016	0.355
Child Care Leave Pay	-0.090	0.220	0.298	-0.152	0.417	--	0.060	0.201	0.051	0.230	0.198	0.023	0.452	0.338	0.337
Guaranteed Child Care for Ages 0-2	0.443	0.305	0.074	0.088	0.182	0.060	--	0.541	0.614	0.438	0.524	0.517	0.223	-0.391	0.046
Guaranteed Child Care for Ages 3-School Age	0.375	0.699	0.314	0.331	0.375	0.201	0.541	--	0.413	0.720	0.358	0.522	0.471	-0.271	0.405
Coverage of Child Care for Ages 0-2	0.789	0.422	-0.183	0.041	0.537	0.051	0.614	0.413	--	0.424	0.736	0.864	0.189	-0.306	0.294
Coverage of Child Care for Ages 3-School Age	0.395	0.753	0.202	0.380	0.360	0.230	0.438	0.720	0.424	--	0.300	0.398	0.541	-0.027	0.671
Public Expenditure on Leaves	0.699	0.446	0.064	0.157	0.498	0.198	0.524	0.358	0.736	0.300	--	0.758	0.188	-0.066	0.291
Public Expenditure on Child Care	0.727	0.474	-0.125	0.134	0.437	0.023	0.517	0.522	0.864	0.398	0.758	--	0.083	-0.349	0.378
Public Expenditure on Family Allowances	0.113	0.514	0.498	0.070	0.500	0.452	0.223	0.471	0.189	0.541	0.188	0.083	--	0.054	0.189
Child Care Tax Relief	-0.376	-0.136	0.108	0.232	0.016	0.338	-0.391	-0.271	-0.306	-0.027	-0.066	-0.349	0.054	--	0.164
Time	0.381	0.573	0.008	0.257	0.355	0.337	0.046	0.405	0.294	0.671	0.291	0.378	0.189	0.164	--

328

Appendix 10: Exploratory Analysis of Employment In Services and Women's Educational Attainment

Panel A: Female Labor Force Participation Rates

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.808 ***	(0.033)			0.816 ***	(0.046)
Lagged Female Average Years of School			2.209 ***	(0.157)	0.045	(0.182)
Lagged Female Share of the Labor Force	1.119 ***	(0.041)	1.396 ***	(0.046)	1.118 ***	(0.041)
Time	-0.196 ***	(0.021)	-0.056 *	(0.024)	-0.196 ***	(0.021)
Time Squared						
Intercept	-13.955 ***	(1.218)	-14.928 ***	(1.562)	-13.851 ***	(1.289)
Residual (Ln)	1.576 ***	(0.027)	1.770 ***	(0.027)	1.577 ***	(0.027)
N	666		666		666	
-2 Log-Likelihood	-2002		-2129		-2002	
Fixed Effect Parms	4		4		5	
Random/Serial/Residual Parms	1		1		1	

Panel B: Female Part-Time Employment Rates

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	1.555 ***	(0.092)			2.107 ***	(0.109)
Lagged Female Average Years of School			1.338 ***	(0.394)	3.108 ***	(0.376)
Lagged Female Share of the Labor Force	-1.431 ***	(0.164)	0.280	(0.162)	-1.516 ***	(0.154)
Time	1.359 ***	(0.235)	0.506	(0.288)	1.234 ***	(0.221)
Time Squared	-0.226 ***	(0.038)	-0.059	(0.046)	-0.208 ***	(0.036)
Intercept	6.535	(4.219)	-1.831	(5.313)	15.920 ***	(4.118)
Residual (Ln)	2.282 ***	(0.032)	2.499 ***	(0.032)	2.219 ***	(0.032)
N	499		499		499	
-2 Log-Likelihood	-1852		-1958		-1820	
Fixed Effect Parms	5		5		6	
Random/Serial/Residual Parms	1		1		1	

Panel C: Female Share of Part-Time Employment

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.315 ***	(0.074)			0.330 ***	(0.090)
Lagged Female Average Years of School			-1.888 ***	(0.246)	-1.957 ***	(0.312)
Lagged Female Share of the Labor Force	0.621 ***	(0.132)	0.596 ***	(0.102)	0.568 ***	(0.128)
Time	0.454 *	(0.190)	0.364 *	(0.180)	0.375 *	(0.183)
Time Squared	-0.085 **	(0.031)	-0.071 *	(0.029)	-0.073 *	(0.030)
Intercept	59.634 ***	(3.402)	65.269 ***	(3.320)	65.544 ***	(3.409)
Residual (Ln)	2.067 ***	(0.032)	2.029 ***	(0.032)	2.030 ***	(0.032)
N	499		499		499	
-2 Log-Likelihood	-1745		-1725		-1727	
Fixed Effect Parms	5		5		6	
Random/Serial/Residual Parms	1		1		1	

Panel D: Female Share of Involuntary PT Emp.

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	-1.087 ***	(0.105)			-1.348 ***	(0.119)
Lagged Female Average Years of School			1.555 ***	(0.420)	1.791 ***	(0.410)
Lagged Female Share of the Labor Force	2.586 ***	(0.213)	1.003 ***	(0.186)	2.555 ***	(0.208)
Time	-0.984	(0.595)	0.664	(0.671)	-0.813	(0.580)
Time Squared	0.111	(0.083)	-0.13	(0.093)	0.088	(0.081)
Intercept	-26.084 **	(9.963)	-28.465 *	(11.625)	-32.475 ***	(9.796)
Residual (Ln)	2.112 ***	(0.040)	2.255 ***	(0.040)	2.084 ***	(0.040)
N	317		317		317	
-2 Log-Likelihood	-1123		-1166		-1113	
Fixed Effect Parms	5		5		6	
Random/Serial/Residual Parms	1		1		1	

Panel E: Male-Female Wage Gap

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.306 ***	(0.049)			0.651 ***	(0.061)
Lagged Female Average Years of School			0.453 *	(0.206)	2.178 ***	(0.248)
Lagged Female Share of the Labor Force	-0.050	(0.058)	-0.227 ***	(0.055)	-0.009	(0.055)
Time	-0.099 **	(0.033)	-0.234 ***	(0.031)	-0.112 ***	(0.031)
Time Squared						
Intercept	41.348 ***	(1.798)	35.784 ***	(1.985)	35.520 ***	(1.819)
Residual (Ln)	1.903 ***	(0.029)	1.931 ***	(0.029)	1.843 ***	(0.029)
N	600		600		600	
-2 Log-Likelihood	-1999		-2014		-1963	
Fixed Effect Parms	4		4		5	
Random/Serial/Residual Parms	1		1		1	

Panel F: Size-Standardized Index of Dissimilarity

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.189 *	(0.084)			0.198 *	(0.101)
Lagged Female Average Years of School			1.190 ***	(0.312)	1.173 **	(0.396)
Lagged Female Share of the Labor Force	-0.050	(0.138)	-0.050	(0.113)	-0.054	(0.132)
Time	-0.312 ***	(0.055)	-0.303 ***	(0.051)	-0.304 ***	(0.052)
Time Squared						
Intercept	59.259 ***	(3.535)	56.611 ***	(3.348)	56.674 ***	(3.486)
Residual (Ln)	1.410 ***	(0.077)	1.357 ***	(0.077)	1.363 ***	(0.077)
N	84		84		84	
-2 Log-Likelihood	-241		-235.1		-236.5	
Fixed Effect Parms	4		4		5	
Random/Serial/Residual Parms	1		1		1	

Panel G: Female Labor Force Participation Rates, Ages 15-24

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	1.316 ***	(0.065)			1.194 ***	(0.085)
Lagged Female Average Years of School			3.738 ***	(0.291)	0.733 *	(0.330)
Lagged Female Share of the Labor Force	-0.111	(0.093)	0.448 ***	(0.096)	-0.112	(0.092)
Time	-0.698 ***	(0.040)	-0.505 ***	(0.044)	-0.695 ***	(0.040)
Time Squared						
Intercept	23.944 ***	(2.495)	17.828 ***	(2.929)	22.610 ***	(2.558)
Residual (Ln)	2.146 ***	(0.029)	2.287 ***	(0.029)	2.143 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-2115		-2196		-2113	
Fixed Effect Parms	4		4		5	
Random/Serial/Residual Parms	1		1		1	

Panel H: Female Labor Force Participation Rates, Ages 25-34

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.460 ***	(0.043)			0.274 ***	(0.055)
Lagged Female Average Years of School			-0.682 ***	(0.166)	-1.371 ***	(0.214)
Lagged Female Share of the Labor Force	2.014 ***	(0.062)	2.144 ***	(0.055)	2.014 ***	(0.060)
Time	0.919 ***	(0.078)	0.945 ***	(0.077)	0.916 ***	(0.076)
Time Squared	-0.139 ***	(0.014)	-0.137 ***	(0.014)	-0.14 ***	(0.014)
Intercept	-27.999 ***	-1.731	-26.528 ***	-1.742	-25.521 ***	-1.719
Residual (Ln)	1.741 ***	(0.029)	1.728 ***	(0.029)	1.708 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-1879		-1870		-1860	
Fixed Effect Parms	5		5		6	
Random/Serial/Residual Parms	1		1		1	

Panel I: Female Labor Force Participation Rates, Ages 35-44

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.316 ***	(0.046)			0.610 ***	(0.057)
Lagged Female Average Years of School			-1.232 **	(0.184)	-1.765 ***	(0.221)
Lagged Female Share of the Labor Force	2.722 ***	(0.065)	3.011 ***	(0.061)	2.722 ***	(0.062)
Time	0.047	(0.082)	0.109	(0.085)	0.043	(0.078)
Time Squared	-0.033 *	(0.015)	-0.028	(0.015)	-0.034 *	(0.014)
Intercept	-54.09 ***	-1.821	-53.139 ***	-1.928	-50.901 ***	-1.776
Residual (Ln)	1.791 ***	(0.029)	1.829 ***	(0.029)	1.741 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-1909		-1930		-1879	
Fixed Effect Parms	5		5		6	
Random/Serial/Residual Parms	1		1		1	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

329

Panel A: Female Labor Force Participation Rates

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.742 ***	(0.051)	0.811 ***	(0.048)	0.785 ***	(0.049)
Lagged Female Average Years of School	0.185	(0.192)	0.549 **	(0.181)	0.739 ***	(0.196)
Lagged Unemployment Rate	-0.195 ***	(0.057)	-0.320 ***	(0.048)	-0.413 ***	(0.061)
Lagged Real GDP			-0.425 ***	(0.042)	-0.558 ***	(0.069)
Lagged Female Share of the Labor Force	1.132 ***	(0.041)	1.127 ***	(0.038)	1.108 ***	(0.039)
Time	-0.154 ***	(0.025)			0.095 *	(0.039)
Time Squared					-0.191 ***	(0.038)
Intercept	-13.245 ***	(1.291)	-12.571 ***	(1.135)	-11.219 ***	(1.257)
Residual (Ln)	1.569 ***	(0.027)	1.526 ***	(0.027)	1.522 ***	(0.027)
N	666		666		666	
-2 Log-Likelihood	-1999		-1970		-1969	
Fixed Effect Parms	6		6		7	
Random/Serial/Residual Parms	1		1		1	

Panel B: Female Part-Time Employment Rates

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	2.176 ***	(0.119)	2.106 ***	(0.122)	2.164 ***	(0.119)
Lagged Female Average Years of School	-3.354 ***	(0.411)	-3.622 ***	(0.414)	-3.565 ***	(0.449)
Lagged Unemployment Rate	0.189	(0.128)	0.334 **	(0.119)	0.271	(0.146)
Lagged Real GDP			-0.028	(0.097)	0.177	(0.152)
Lagged Female Share of the Labor Force	-1.512 ***	(0.154)	-1.283 ***	(0.142)	-1.484 ***	(0.156)
Time	1.103 ***	(0.238)			1.027 ***	(0.247)
Time Squared	-0.191 ***	(0.038)			-0.191 ***	(0.038)
Intercept	15.754 ***	(4.115)	24.867 ***	(3.718)	14.405 ***	(4.273)
Residual (Ln)	2.217 ***	(0.032)	2.243 ***	(0.032)	2.217 ***	(0.032)
N	499		499		499	
-2 Log-Likelihood	-1820		-1830		-1820	
Fixed Effect Parms	7		6		8	
Random/Serial/Residual Parms	1		1		1	

Panel C: Female Share of Part-Time Employment

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	-0.113	(0.097)	-0.136	(0.098)	-0.112	(0.098)
Lagged Female Average Years of School	-1.444 ***	(0.336)	-1.600 ***	(0.334)	-1.425 ***	(0.368)
Lagged Unemployment Rate	-0.395 ***	(0.105)	-0.304 **	(0.096)	-0.403 ***	(0.120)
Lagged Real GDP			-0.040	(0.078)	-0.016	(0.125)
Lagged Female Share of the Labor Force	0.561 ***	(0.126)	0.709 ***	(0.115)	0.558 ***	(0.128)
Time	0.647 ***	(0.194)			0.654 **	(0.202)
Time Squared	-0.109 ***	(0.031)			-0.109 ***	(0.031)
Intercept	65.890 ***	(3.365)	70.679 ***	(2.998)	66.010 ***	(3.500)
Residual (Ln)	2.016 ***	(0.032)	2.028 ***	(0.032)	2.017 ***	(0.032)
N	499		499		499	
-2 Log-Likelihood	-1721		-1724		-1722	
Fixed Effect Parms	7		6		8	
Random/Serial/Residual Parms	1		1		1	

Panel D: Female Share of Involuntary PT Emp.

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	-0.895 ***	(0.124)	-0.791 ***	(0.118)	-0.804 ***	(0.118)
Lagged Female Average Years of School	0.851 *	(0.396)	1.462 ***	(0.393)	1.710 ***	(0.400)
Lagged Unemployment Rate	1.027 ***	(0.134)	0.757 ***	(0.138)	0.665 ***	(0.140)
Lagged Real GDP			-0.514 ***	(0.091)	-0.799 ***	(0.130)
Lagged Female Share of the Labor Force	2.371 ***	(0.192)	2.231 ***	(0.167)	2.165 ***	(0.185)
Time	-0.923	(0.533)			-0.722	(0.505)
Time Squared	0.111	(0.074)			0.139 *	(0.071)
Intercept	-44.361 ***	(9.131)	-50.659 ***	(5.044)	-33.997 ***	(8.796)
Residual (Ln)	1.999 ***	(0.040)	1.959 ***	(0.040)	1.943 ***	(0.040)
N	317		317		317	
-2 Log-Likelihood	-1087		-1073		-1071	
Fixed Effect Parms	7		6		8	
Random/Serial/Residual Parms	1		1		1	

Panel E: Male-Female Wage Gap

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	-0.614 ***	(0.068)	-0.607 ***	(0.066)	-0.597 ***	(0.068)
Lagged Female Average Years of School	2.076 ***	(0.261)	2.349 ***	(0.260)	2.294 ***	(0.277)
Lagged Unemployment Rate	0.098	(0.078)	-0.028	(0.066)	0.005	(0.087)
Lagged Real GDP			-0.265 ***	(0.061)	-0.221 *	(0.097)
Lagged Female Share of the Labor Force	-0.017	(0.055)	-0.031	(0.054)	-0.026	(0.055)
Time	-0.136 ***	(0.036)			-0.034	(0.058)
Time Squared						
Intercept	35.185 ***	(1.837)	36.358 ***	(1.681)	35.897 ***	(1.858)
Residual (Ln)	1.843 ***	(0.029)	1.839 ***	(0.029)	1.839 ***	(0.029)
N	600		600		600	
-2 Log-Likelihood	-1964		-1961		-1963	
Fixed Effect Parms	6		6		7	
Random/Serial/Residual Parms	1		1		1	

Panel F: Size-Standardized Index of Dissimilarity

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.046	(0.126)	-0.025	(0.124)	0.049	(0.125)
Lagged Female Average Years of School	1.069 *	(0.444)	1.754 ***	(0.435)	1.298 **	(0.472)
Lagged Unemployment Rate	0.084	(0.161)	-0.340 *	(0.140)	-0.052	(0.189)
Lagged Real GDP			-0.470 ***	(0.097)	-0.208	(0.152)
Lagged Female Share of the Labor Force	-0.066	(0.134)	-0.084	(0.134)	-0.084	(0.134)
Time	-0.320 ***	(0.062)			-0.216 *	(0.098)
Time Squared						
Intercept	56.366 ***	(3.551)	61.138 ***	(3.437)	57.792 ***	(3.681)
Residual (Ln)	1.368 ***	(0.077)	1.387 ***	(0.077)	1.362 ***	(0.077)
N	84		84		84	
-2 Log-Likelihood	-237		-238		-237	
Fixed Effect Parms	6		6		7	
Random/Serial/Residual Parms	1		1		1	

Panel G: Female Labor Force Participation Rates, Ages 15-24

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	1.056 ***	(0.093)	1.128 ***	(0.088)	1.162 ***	(0.089)
Lagged Female Average Years of School	1.166 ***	(0.351)	2.665 ***	(0.327)	2.343 ***	(0.359)
Lagged Unemployment Rate	-0.360 ***	(0.105)	-0.945 ***	(0.087)	-0.796 ***	(0.111)
Lagged Real GDP			-1.263 ***	(0.076)	-1.054 ***	(0.124)
Lagged Female Share of the Labor Force	-0.096	(0.092)	-0.292 ***	(0.085)	-0.237 **	(0.088)
Time	-0.619 ***	(0.046)			-0.150 *	(0.070)
Time Squared						
Intercept	24.277 ***	(2.581)	32.639 ***	(2.235)	30.070 ***	(2.530)
Residual (Ln)	2.134 ***	(0.029)	2.079 ***	(0.029)	2.076 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-2108		-2076		-2075	
Fixed Effect Parms	6		6		7	
Random/Serial/Residual Parms	1		1		1	

Panel H: Female Labor Force Participation Rates, Ages 25-34

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.292 ***	(0.062)	0.386 ***	(0.065)	0.280 ***	(0.062)
Lagged Female Average Years of School	-1.429 ***	(0.232)	-2.013 ***	(0.241)	-1.559 ***	(0.250)
Lagged Unemployment Rate	0.048	(0.074)	0.435 ***	(0.064)	0.095	(0.082)
Lagged Real GDP			0.200 ***	(0.056)	0.118	(0.086)
Lagged Female Share of the Labor Force	2.014 ***	(0.060)	2.119 ***	(0.062)	2.030 ***	(0.061)
Time	0.886 ***	(0.089)			0.840 ***	(0.095)
Time Squared	-0.136 ***	(0.015)			-0.137 ***	(0.015)
Intercept	-25.618 ***	(1.726)	-24.227 ***	(1.651)	-26.297 ***	(1.794)
Residual (Ln)	1.708 ***	(0.029)	1.776 ***	(0.029)	1.708 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-1862		-1898		-1862	
Fixed Effect Parms	7		6		8	
Random/Serial/Residual Parms	1		1		1	

Panel I: Female Labor Force Participation Rates, Ages 35-44

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.
Fixed Effects						
Lagged Employment in Services	0.535 ***	(0.063)	0.578 ***	(0.063)	0.554 ***	(0.064)
Lagged Female Average Years of School	-1.526 ***	(0.238)	-1.367 ***	(0.233)	-1.335 ***	(0.256)
Lagged Unemployment Rate	-0.200 **	(0.076)	-0.209 ***	(0.062)	-0.269 **	(0.084)
Lagged Real GDP			-0.228 ***	(0.054)	-0.174 *	(0.088)
Lagged Female Share of the Labor Force	2.723 ***	(0.062)	2.710 ***	(0.060)	2.700 ***	(0.063)
Time	0.167	(0.091)			0.235 *	(0.097)
Time Squared	-0.050 **	(0.015)			-0.048 **	(0.015)
Intercept	-50.501 ***	(1.774)	-47.761 ***	(1.592)	-49.504 ***	(1.840)
Residual (Ln)	1.736 ***	(0.029)	1.740 ***	(0.029)	1.733 ***	(0.029)
N	592		592		592	
-2 Log-Likelihood	-1878		-1877		-1877	
Fixed Effect Parms	7		6		8	
Random/Serial/Residual Parms	1		1		1	

Note: Estimation method is REML
* p < .05, ** p < .01, *** p < .001

Appendix 12: Assessing Functional Relationship Over Time for Women's Employment Outcomes

	Panel A: Female Labor Force Participation Rates					Panel B: Female Part-Time Employment Rates				
Time	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Non-Parametric	-2574.21	49	1	5248.41	5474.96	-1972.32	49	1	4044.65	4255.48
Time^5	-2574.85	6	1	5163.71	5195.42	-1973.30	6	1	3960.60	3990.12
Time^4	-2574.89	5	1	5161.78	5188.96	-1973.39	5	1	3958.79	3984.09
Time^3	-2577.01	4	1	5164.02	5186.68	-1973.41	4	1	3956.83	3977.91
Time^2	-2578.13	3	1	5164.26	5182.38	-1974.03	3	1	3956.05	3972.92
Linear Time	**-2579.46**	**2**	**1**	**5164.92**	**5178.51**	**-1974.88**	**2**	**1**	**3955.75**	**3968.40**
No Time Function	-2761.57	1	1	5527.15	5536.21	-1996.40	1	1	3996.81	4005.24

	Panel C: Female Share of Part-Time Employment					Panel D: Female Share of Involuntary PT Emp.				
Non-Parametric	-1747.15	49	1	3594.30	3805.13	-1172.02	33	1	2412.03	2539.83
Time^5	-1748.96	6	1	3511.93	3541.44	-1176.12	6	1	2366.24	2392.56
Time^4	-1751.10	5	1	3514.19	3539.49	-1176.51	5	1	2365.02	2387.57
Time^3	-1751.10	4	1	3512.20	3533.28	-1178.40	4	1	2366.80	2385.60
Time^2	**-1754.80**	**3**	**1**	**3517.59**	**3534.46**	**-1178.43**	**3**	**1**	**2364.85**	**2379.89**
Linear Time	-1767.53	2	1	3541.06	3553.71	-1181.48	2	1	2368.97	2380.24
No Time Function	-1767.57	1	1	3539.13	3547.56	-1181.49	1	1	2366.98	2374.50

	Panel E: Male-Female Wage Gap					Panel F: Size-Standardized Index of Dissimilarity				
Non-Parametric	-2081.44	49	1	4262.88	4484.05	-232.15	15	1	496.31	535.20
Time^5	-2083.97	6	1	4181.94	4212.90	-237.71	6	1	489.42	506.43
Time^4	-2083.99	5	1	4179.99	4206.53	-237.97	5	1	487.93	502.52
Time^3	-2083.99	4	1	4177.99	4200.10	-238.18	4	1	486.36	498.51
Time^2	-2084.15	3	1	4176.30	4193.99	-238.18	3	1	484.37	494.09
Linear Time	**-2084.16**	**2**	**1**	**4174.32**	**4187.59**	**-239.11**	**2**	**1**	**484.23**	**491.52**
No Time Function	-2164.96	1	1	4333.92	4342.76	-253.47	1	1	510.95	515.81

Note: Smaller values of AIC and BIC indicate a better fitting model; models in bold are the selected models. Estimation Method is ML.

Appendix 13: Assessing Functional Relationship Over Time for Age-Grade Rates of Female Labor Force Participation

| | Panel A: Ages 15-24 | | | | | Panel B: Ages 25-34 | | | | |
	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC	-2 Log Likelihood	# of Fixed Parms.	# of Residual Parms.	AIC	BIC
Time										
Non-Parametric	-2354.59	49	1	4809.18	5029.61	-2318.03	49	1	4736.07	4956.49
Time^5	-2357.29	6	1	4728.58	4759.44	-2319.48	6	1	4652.96	4683.82
Time^4	-2357.31	5	1	4726.62	4753.08	-2319.97	5	1	4651.93	4678.38
Time^3	-2361.23	4	1	4732.46	4754.50	-2325.57	4	1	4661.15	4683.19
Time^2	-2361.63	3	1	4731.26	4748.89	**-2327.45**	**3**	**1**	**4662.91**	**4680.54**
Linear Time	**-2364.03**	**2**	**1**	**4734.06**	**4747.28**	-2354.70	2	1	4715.39	4728.62
No Time Function	-2364.89	1	1	4733.77	4742.59	-2591.50	1	1	5187.00	5195.82

	Panel C: Ages 35-44					Panel D: Ages 45-54				
Non-Parametric	-2507.03	49	1	5114.05	5334.48	-2604.00	49	1	5308.00	5528.43
Time^5	-2507.57	6	1	5029.15	5060.01	-2604.13	6	1	5222.27	5253.13
Time^4	-2507.57	5	1	5027.15	5053.60	-2604.15	5	1	5220.30	5246.75
Time^3	-2508.24	4	1	5026.47	5048.51	-2604.20	4	1	5218.40	5240.44
Time^2	**-2509.67**	**3**	**1**	**5027.34**	**5044.97**	-2604.65	3	1	5217.29	5234.92
Linear Time	-2515.89	2	1	5037.78	5051.00	**-2604.66**	**2**	**1**	**5215.32**	**5228.55**
No Time Function	-2688.05	1	1	5380.11	5388.92	-2731.85	1	1	5467.70	5476.52

Note: Smaller values of AIC and BIC indicate a better fitting model; models in bold are the selected models. Estimation Method is ML.

Appendix 14: Variability Over Time and Across Countries in Women's Employment Outcomes

Variabile:	Variation Over Time, Within Countries	Variation Across Countries
Female Labor Force Participation Rate	46.20%	46.23%
Female Part-Time Employment Rate	18.07%	80.82%
Female Share of Part-Time Employment	16.86%	81.79%
Female Share of Involuntary PT Emp.-PT Emp.	15.64%	72.97%
Male-Female Wage Gap	29.83%	59.28%
Size-Standardized Index of Dissimilarity	50.69%	51.09%
Age-Graded Female LFP Rates:		
Ages 15-24	11.15%	72.47%
Ages 25-34	62.67%	40.41%
Ages 35-44	49.38%	55.04%
Ages 45-54	39.68%	61.90%

Appendix 15: Mixed Models Results Estimating Occupational Gender Segregation Index Using One Variable at a Time

Variable	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Fixed Effects									
Lagged Employment in Services	0.192 *								
Lagged Female Average Years of School		0.122							
Lagged Real GDP			0.076						
Lagged Unemployment Rate				0.059					
Lagged Left Cab and Corp Scale					1.251				
Lagged Cumulative Females in Parliament						0.233			
Lagged Individual Taxation							-2.882 *		
Lagged Public Sector Employment								0.326 *	
Lagged Female Share of the Labor Force									-0.414 **
Time	-0.258 ***	-0.338 ***	-0.287 ***	-0.254 ***	-0.270 ***	-0.294 ***	-0.205 ***	-0.276 ***	-0.107 *
Intercept	62.668 ***	57.119 ***	62.515 ***	62.952 ***	63.763 ***	62.507 ***	63.616 ***	61.290 ***	75.874 ***
Random Effects									
Intercept	2.924 ***	2.642 ***	2.947 ***	2.926 ***	2.953 ***	2.734 ***	2.974 ***	2.850 ***	3.860 ***
Serial Correlation:									
Rho	0.101 *	0.088 *	0.092 **	0.084 ***	0.017 **	0.089 **	0.105 **	0.013 ***	0.093 ***
Residual	3.016 ***	2.940 ***	3.004 ***	3.009 ***	2.952 ***	2.977 ***	2.899 ***	2.951 ***	2.725 ***
N	84	84	84	84	84	84	84	84	84
Countries	14	14	14	14	14	14	14	14	14
-2 Log-Likelihood	-226.50	-222.20	-226.10	-226.20	-223.20	-224.60	-221.30	-224.60	-222.60
Fixed Effect Parms	3	3	3	3	3	3	3	3	3
Random/Serial/Residual Parms	3	3	3	3	3	3	3	3	3
AIC	465.01	456.33	464.12	464.31	458.37	461.21	454.62	461.25	457.19
BIC	479.59	470.91	478.71	478.90	472.95	475.79	469.20	475.83	471.77

Note: Estimation method is REML. Standard errors are not shown in order to save space, but are available upon request.

 * p < .05, ** p < .01, *** p < .001

Appendix 16: Mixed Models Results Estimating Occupational Gender Segregation Index Using One Variable at a Time

Variable	Estimate	Estimate	Estimate	Estimate
Fixed Effects				
Parental Leave Index	-0.188	--	--	--
Child Care Ages 0-2 Index	--	0.601	--	--
C.C. Ages 3-School Age Index	--	--	-0.236	--
Family Allowances, Benefits, Credits Index	--	--	--	3.342 *
Time	-0.238 ***	-0.224 ***	-0.230 ***	-0.240 **
Intercept	63.317 ***	62.385 ***	63.079 ***	63.177 ***
Serial Correlation:				
Rho	0.926 ***	0.927 ***	0.925 ***	0.924 ***
Gamma	0.727 ***	0.713 ***	0.727 ***	0.721 ***
Residual	4.307 ***	4.282 ***	4.332 ***	4.290 ***
Proportion of Variance Explained	13.44%	13.94%	12.93%	13.79%
N	84	80	82	83
Countries	14	14	14	14
-2 Log-Likelihood	-215.9	-206.2	-211.6	-214.1
Fixed Effect Parms	3	3	3	3
Random/Serial/Residual Parms	3	3	3	3
AIC	437.80	418.40	429.20	434.20
BIC	439.70	420.40	431.10	436.10

Note: Estimation method is REML. Standard errors are not shown in order to save space, but are available upon request.

 * $p < .05$, ** $p < .01$, *** $p < .001$

Appendix 17: Mixed Model Results Estimating the Effect of Family Policy Indexes on the Association Index, for Comparison with Size-Standardized Results

Variable	Model 1 Estimate	S.E.	Model 2 Estimate	S.E.	Model 3 Estimate	S.E.	Model 4 Estimate	S.E.	Model 5 Estimate	S.E.
Fixed Effects										
Parental Leave Index, 2 Year Lag	--	--	-0.528	(0.861)	--	--	--	--	--	--
Child Care Ages 0-2 Index, 2 Year Lag	--	--	--	--	-1.456	(0.995)	--	--	--	--
C.C. Ages 3-School Age Index, 2 Year Lag	--	--	--	--	--	--	0.015	(1.133)		
Family Allowances, Benefits, Credits Index, 2 Year Lag	--	--	--	--	--	--	--	--	1.346 *	(0.562)
Lagged Employment in Services	0.192 *	(0.084)	0.118 *	(0.050)	0.140 **	(0.049)	0.123 *	(0.056)	0.131 *	(0.050)
Lagged Female Average Years of School	-0.319	(0.318)	-0.327	(0.230)	-0.556	(0.326)	-0.315	(0.245)	-0.350	(0.264)
Lagged Real GDP	-0.064	(0.123)	-0.068	(0.100)	-0.004	(0.098)	-0.066	(0.103)	-0.092	(0.088)
Lagged Unemployment Rate	0.033	(0.081)	0.020	(0.050)	0.125	(0.083)	0.021	(0.060)	0.014	(0.052)
Lagged Left Cab and Corp Scale	-0.390	(0.596)	-0.398	(0.547)	-0.248	(0.563)	-0.396	(0.607)	-0.572	(0.494)
Lagged Cumulative Females in Parliament	0.106	(0.108)	0.110	(0.110)	0.137	(0.134)	0.102	(0.119)	0.148	(0.112)
Lagged Individual Taxation	-1.563 **	(0.575)	-1.567 ***	(0.257)	-1.611 ***	(0.241)	-1.535 ***	(0.272)	-1.578 ***	(0.281)
Lagged Public Sector Employment	0.390 **	(0.094)	0.046	(0.052)	0.075	(0.064)	0.038	(0.068)	0.050	(0.050)
Lagged Female Share of the Labor Force	-0.496 ***	(0.079)	-0.082	(0.042)	-0.054	(0.038)	-0.085 *	(0.054)	-0.126	(0.062)
Time	-0.063	(0.063)	-0.054	(0.063)	-0.089	(0.068)	-0.060	(0.080)	-0.048	(0.062)
Intercept	9.453 ***	(2.286)	9.500 ***	(1.866)	7.752 ***	(1.630)	9.320 ***	(2.350)	10.196 ***	(1.866)
Random Effects										
Intercept	0.889	(1.175)	---	--	---	--	---	--	---	--
Serial Correlation and Residual Variation:										
Rho	0.937 ***	(0.074)	0.892 ***	(0.052)	0.873 ***	(0.040)	0.896 ***	(0.050)	0.898 ***	(0.049)
Residual	1.391 ***	(0.643)	1.640 ***	(0.230)	1.524 ***	(0.065)	1.702 ***	(0.235)	1.653 ***	(0.234)
Proportion of Variance Explained	25.79%		12.51%		18.68%		9.18%		11.79%	
N	48		48		44		46		47	
Countries	14		14		14		14		14	
-2 Log-Likelihood	-87.20		-85.75		-78.25		-83.55		-84.45	
Fixed Effect Parms	11		11		11		11		11	
Random/Serial/Residual Parms	3		2		2		2		2	
AIC	180.40		175.5		160.5		171.1		172.9	
BIC	182.30		175.5		161.8		172.4		174.1	

Note: Estimation method is REML

 * p < .05, ** p < .01, *** p < .001