Social Policy Contexts, Family Well-being, and Gender Equality from a Comparative Perspective

Ji Young Kang

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2017

Reading Committee:

Marcia K. Meyers, Chair

Jennifer Romich

Melissa Martinson

Program Authorized to Offer Degree:

School of Social Work

University of Washington

Abstract

Social Policy Contexts, Family Well-being, and Gender Equality

from a Comparative Perspective

Ji Young Kang

Chair of the Supervisory Committee:
Professor Marcia K. Meyers
School of Social Work

My dissertation focuses on the question of how family policies and market institutions matter to individual life chances and outcomes, in particular poverty and gender equality. Among a set of multiple and heterogeneous policies (Thévenon, 2011) that affect families and child well-being, I highlight policies promoting female employment, gender equality, and work and life reconciliation (Gornick & Meyers, 2008; Lewis, 2006).

From institutional and comparative perspectives, three different but related papers address the questions of (1) whether and to what extent United States paid maternity leave reduces use of public assistance programs for low-income mothers; (2) how family policies and market economies influence the gender employment gap from the comparative welfare state perspective; and (3) how market structures mediate the effect of childcare and leave programs on the gender wage gap across Organization for Economic Co-operation and Development countries.

The findings reported in Paper 1 show a causal inference of policy effect in which state paid maternity leave reduces TANF use for low-income mothers, suggesting that paid maternity

leave provides an economic means of support during time off around child birth. This study further finds that the reduction in TANF use varies across states due to differences in paid maternity leave program rules such as those governing the relative generosity or restrictiveness of eligibility criteria. The findings contribute to the identification of the differential impacts of paid maternity leave program rules on TANF participation around childbirth.

The findings in Paper 2 show that work and publically supported childcare and leave entitlements are associated with smaller gaps in employment participation between male and female. In addition, the types of market institutions matter. The coordinated market economies with higher specific skill profiles are associated with smaller gender gaps in employment participation. The finding of the importance of market institutions to understand female employment has a significant implication because little is known about the role of market economies in shaping female employment, whereas the role of family policy on female employment is well established.

The findings in Paper 3 show that the extent to which family policy affects the gender wage gap hinges on different market and welfare regimes, i.e., how each country organize its market coordination and welfare institutions. This study pushes the current literature forward from a question of how family policy matters to a question of "what kinds of" family policy matters in "which" market economies. My analysis suggests that it may be useful to introduce the varieties-of-capitalism theory to help understand the puzzle of why family policy produces a higher gender-wage gap in certain systems of advanced capitalism.

TABLE OF CONTENTS

Page

LIST OF FIGURES

Figure Number Page

LIST OF TABLES

Table Number Page

ACKNOWLEDGMENTS

This dissertation could not have been realized without the guidance from my committee members, help from friends, and support from my family and husband.

My profound gratitude goes to my chair, Dr. Marcia Meyers, for her enthusiasm, caring, unwavering support, and in-depth advice from a very early stage. As my teacher and mentor, she has taught me more than I could ever give her credit for here. She has shown me, by her example, what a good scholar (and person) should be. I am sincerely grateful to Dr. Jennifer Romich, who let me join her research group, supported my attendance at various conferences, and financially supported my research. I would like to thank Dr. Melissa Martinson for her advice in research methods and for her mentoring in professional development. Special thanks go to Dr. Linda Ko, who was willing to participate in my final defense committee at the last moment and to Dr. Toben Iversen who shared his dataset on skill specificity.

I have benefited from the financial support of the West Coast Poverty Center through the Social Policy Research Fellowship and a travel grant that allowed me to attend the Luxembourg Income Study Workshop. Papers one and two, especially, were made possible through these grants.

I would like to thank my husband, Myengsoo Seo, for his unending support and encouragement and my daughter, Anna K. Seo (서감비), who has been more than a joy in my life. I am grateful to my mother and mother-in-law, who took care of Anna during the final stages of writing this dissertation, and to my father, all of them for their unending encouragement and support through the many years since this project first began to take shape. First and foremost, I would like to express my gratitude to God for providing me the blessings to complete this work, for I know that everything comes from God.

INTRODUCTION

Over the past decade, the dramatic rise in inequality (Hacker & Pierson, 2010) and the dismantling of the American dream in terms of achieving social mobility (Chetty et al., 2016) have become more pronounced and striking than ever before. Political debates on the causes of poverty and inequality have often concentrated on individual attributions and characteristics, and thereby, most of the remedies for the growing poverty rates have focused on correcting individual misbehaviors rather than intervention into the areas of wage structure and labor market inequalities. Policy efforts have been engaged instead on market approaches such as tax credits and benefits as a means for redistribution and on individual-level interventions to increase work effort. The Personal Responsibility and Work Opportunity Act (PRWOA), in 1997, is a representative initiative demonstrating the highlighting of individual responsibility that has placed strong work requirements on the eligibility criteria for Temporary Assistance for Needy Families (TANF).

The current debates about poverty and inequality often bypass the importance of the roles of social policies in promoting an equitable society and reducing poverty. Social policies in the United States have long been known as outliers in the context of other developed countries, due to their lack of broad coverage of social protection. Social policies play a crucial role in family economic well-being, including mothers' employment and family economic status, by structuring class and social orders (Esping-Andersen, 1990, p. 5) and by reducing poverty (Brady, 2005) through distributive actions (Hacker, 2006; Korpi & Palme, 2003). The limited U.S. government roles in redistributive efforts preclude effective work toward alleviating inequality and poverty, leaving the least advantaged groups in U.S. society much more vulnerable than those in other countries.

My dissertation focuses on evaluating how social policies and market institutions influence individual life chances and outcomes in terms of family economic well-being based on institutional perspectives. Social policies and market institutions set the rules of the game through the dynamics of power (Mahoney & Thelen, 2010; Hall, 2010) as institutions (North, 1990; Pierson, 2001). Among a set of multiple and heterogeneous policies (Thévenon, 2011) that affect families and child well-being, I highlight policies supporting female employment, gender equality, and work and life reconciliation (Gornick & Meyers, 2008; Lewis, 2006).

Family policy has specific implications in both U.S. and global contexts. The expansion of dual-earner families and the growing role of women as the sole or primary breadwinners have taken place over recent decades. Nonetheless, the United States is the only developed country that does not offer paid maternity leave and public childcare. Paid family leave and good, affordable childcare can be potential policy recommendations for promoting gender equality and reversing extreme poverty and inequality in the United States (Lein, Romich, & Sherraden, 2016).

Cross-nationally, family policy has been increasingly important in welfare states. Women have become crucial stakeholders for new welfare politics with emerging "new risks" (Bonoli, 2005; Esping-Andersen, 1999; Taylor-Gooby, 2004), dismantling old assumptions of traditional male-earner welfare states (Haeusermann, Picot, & Geering, 2013). In light of rapid changes in labor markets, family organization, and gender norms, family policy is a potential driving force for shifts in welfare politics.

My dissertation investigates three different but corresponding questions concerning themes of institutions of family policies or market structures, family well-being, and gender equality from comparative perspectives: (1) whether and to what extent U.S. paid maternity

leave reduces use of public assistance programs for low-income mothers; (2) how family policies and market economies influence the gender employment gap from the comparative welfare state perspective; and (3) how market structures mediate the effect of childcare and leave programs on the gender wage gap across the Organization for Economic Co-operation and Development (OECD) countries.

In undertaking this task, I employed a comparative perspective along with an institutional perspective. The comparative perspective provides a unique opportunity of a natural experiment to identify the causality of the impacts of social policies and of the learning process from other policy examples in the United States. The discretion exercised by state governments in social policy allows for an examination of the impacts of different policy designs within the United States. Cross-national comparative studies allow us to confront the unique conditions and contexts of welfare states and poverty. It sets a crucial starting point in considering alternatives from other countries by reflecting on social contexts and policies within U.S. society.

Paper 1 focuses on whether and how paid maternity leave can improve the lives of economically disadvantaged families, in particular, the use of public assistance by economically vulnerable women in the year after childbirth in the United States. Previous studies have not given sufficient attention to the effect of paid maternity leave programs on economic issues faced by low-income families. In particular, their reliance on public assistance programs remains largely unexplored in the current literature. Access to paid maternity leave could provide an alternate form of economic support for low-income mothers who would have otherwise had no income during their maternity leave. This could, in turn, attenuate low-income families' reliance on public assistance programs, a situation that often carries negative stigma. Despite the absence of federal paid maternity leave, five states have implemented state-level paid maternity leave,

allowing the application of this natural experimental design in examining the causality of the program in the United States. Using nationally representative data, the Current Population Survey (CPS), with an econometric research design of Difference in Difference, the findings in this paper provide important implications to suggest potential means of improving economic situations for low-income families.

Paper 2 and 3 expand the scope of the study from a comparative examination of social policy effects within the United States to cross-national comparative social policy across other OECD countries. These two papers propose the theoretical integration of two theories—Varieties of Capitalism (VoC) and cross-national welfare state—and test the proposed framework by means of empirical studies.

Paper 2 examines the effects of market economies and work and family reconciliation policies on the gender employment gap in 16 OECD countries, by using data from the Luxembourg Income Study (LIS). The role of family policy on female employment has been well established, but little is known about how the market economies influence female employment. Market economies set the basic institutional arrangements for labor markets, and employment consequences are often contingent on the labor market and market contexts, thus market economies have implications for female employment.

Paper 3 seeks to determine whether and how effects of family policies vary across varieties-of-capitalism by using OECD country-level macro data and time-series analysis. In other words, Paper 3 examines the extent to which family policy effects on the gender wage gap may depend on how the coordination of market economies and welfare regimes is organized as a whole.

References

Bonoli, G. (2005). The politics of the new social policies: providing coverage against new social risks in mature welfare states. *Policy and Politics*, *33*(3), 431–449. http://doi.org/10.1332/0305573054325765

Brady, D. (2005). The welfare state and relative poverty in rich western democracies, 1967-1997, *Social Forces*, *83*(4), 1329–1364.

Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R., & Narang, J. (2016). The fading American dream: Trends in absolute income mobility since 1940. NBER Working Paper Series. 22910. Retreived from http://www.nber.org/papers/w22910

Esping-Andersen, G. (1999). *Social foundations of postinustrial economies*. Oxford, UK: Oxford University Press.

Hacker, J., & Pierson, P. (2010). Winner-Take-All poltics: Public policy, political organization, and the precipitous rise of top income in the United States. *Politics & Society. 38*(2). 152-204.

Haeusermann, S., Picot, G., & Geering, D. (2013). Review article: Rethinking party politics and the welfare state - Recent advances in the literature. *British Journal of Political Science*, *43*, 221–240. http://doi.org/10.1017/S0007123412000336

Korpi, W., & Palme, J. (2003). New politics and class politics in the context of austerity and globalization: Welfare state regress in 18 countries, 1975-95. *The American Political Science Review, 97*(3), 425-446.

Lein, L., Romich, J. L., & Sherraden, M. (2016). Reversing extreme inequality (Working Paper No. 16). American Academy of Social Work and Social Welfare. Retrieved from: http://aaswsw.org/wp-content/uploads/2016/01/WP16-with-cover-2.pdf

Mahoney, J., & Thelen, K. (2010). A theory of gradual institutional change. In Mahaoney and Thelen (Eds.), *Explaining institutional change: Ambiguity, agency, and power* (pp. 1-37). Cambridge, United Kingdom: Cambridge University Press.

North, D. C. (1990). *Institutions, institutional change, and economic performance*. Cambridge United Kingdom: Cambridge University Press.

Pierson, P. (2001). *The new politics of the welfare state*. New York, NY: Oxford University Press.

Talyor-Gooby, P. (2004). New risks and social change, In Taylor-Gooby (Ed.), *New Risks, New Welfare* (pp. 1–27). New York, NY: Oxford University Press.

Thévenon, O. (2011). Family policies in OECD countries: a comparative analysis, *Population and Development Review, 37*(1), 57–58.

PAPER ONE.
PAID MATERNITY LEAVE AND WELFARE USE FOR LOW-INCOME FAMILIES

Introduction

The Federal Family and Medical Leave Act (FMLA) of 1993 guaranteed job-protected leave for mothers after they give birth. Although implementation of the FMLA has exerted a variety of positive influences on female employment (Han, Ruhm, & Waldfogel, 2009; Rossin-Slater, Ruhm, & Waldfogel, 2013), the FMLA's narrowly defined eligibility criteria and its absence of wage replacement limit its coverage and effects, disproportionately disadvantaging low-income families (Cantor et al., 2001; Lester, 2005; Waldfogel, 2001).

The absence of paid maternity leave produces more severe economic consequences for low-wage workers. In recent years, more than half of all leave-takers (53.6%) making less than the median income had unpaid maternity leave (Klerman, Daley, & Pozniak, 2012), leading some to curtail their leave (Waldfogel, 2001; Klerman et al., 2012), or to eschew leave completely because they could not afford it (Waldfogel, 2001). In particular, wage interruption around childbirth due to a lack of paid maternity leave often spurs low-wage working mothers to turn to some type of public assistance programs to compensate for the wage loss (Hill, 2012; Klerman et al., 2012; Waldfogel, 2001).

In the absence of federal paid maternity leave, some states provide wage replacement for work interruption caused by pregancy or care for a newborn child through Temporary Disabillity Insuracne (TDI) or Paid Family Leave (PFL) as a form of paid materntiy leave. The different approaches that states have adopted vis-à-vis maternity leave create an excellent opportunity for scholars to examine whether paid maternity leave might influence family economic outcomes for low-income mothers.

Despite the wide-reaching implications of FMLA and paid family leave on mothers' employment and children's well-being, the issue of the effect of paid maternity leave on low-income families remains largely unexplored in the current literature. Access to paid maternity leave could provide an alternate form of economic support for low-income mothers in the post-partum period and could attenuate low-income families' reliance on means-tested program, a situation that often carries negative stigma. Among public assistance programs, this study focuses on the impact of paid maternity leave on reliance on Temporary Assistance for Needy Families (TANF). TANF remains a representative cash assistance program despite the growing importance of auxiliary non-cash transfer programs such as SNAP and Earned Income Tax Credit (EITC) after welfare reform (Shaefer & Edin, 2013). TANF plays a significant role in protecting economically vulnerable mothers with young children who are likely to be affected by paid maternity leave along. Examination of TANF participation offers an opportunity to study the effects of the paid leave on the strictest means-tested program.

This study uses data from the Current Population Survey (CPS) March Annual Social and Economic Supplement 2002–2014 as an empirical point of reference to examine whether and to what extent paid maternity leave may enable low-income families headed by single mothers to curb their reliance on TANF when a child is born. The present study also considers in what way and to what extent the differences in state rules regarding paid maternity leave influence TANF use for low-income families. Paid maternity leave programs differ from state to state in terms of eligibility criteria and benefit levels, which can further influence the interplay between paid maternity leave and low-income mothers' TANF use. Accordingly, this study seeks to expand the current literature by providing a nuanced understanding of the varying effects of paid maternity leave in relation to different paid maternity program rules across states.

Literature Review

Policy contexts: State programs for paid maternity leave in United States

In the absence of federal paid maternity leave, five states (New York, Rhode Island, Hawaii, New Jersey, and California) currently provide wage replacement due to pregnancy through TDI. For normal pregnancies, protected leaves usually start 4 to 6 weeks prior to birth and continue for six weeks thereafter; in the event of a specific complication or a Caesarian section, some states allow for an extended benefit period. California, New Jersey, and Rhode Island started PFL allowing time-off for care for a newborn child in 2004, 2009, and 2014, respectively, in addition to their TDI programs. While TDI and PFL share the similar functions as paid maternity leave, their specific policy focuses differ. Whereas TDI is designed for the provision of resources during interruptions from work due to a disability, including childbirth, PFL places emphasis on protection of care for newborn children by allowing time off to undertake care responsibilities. Eligibility rules and benefits levels for PFL and TDI are almost identical in CA and in NJ. In these states, employees who use TDI for pregnancy can extend their time off to bond with a newborn by using PFL.

Despite the fact that these five states share the goal of providing partial wages in case of job interruption due to pregnancy and childbirth, program rules vary by state in terms of eligibility, benefits, and contribution schemes (Table 1.1 below summarizes the specific eligibility criteria and benefit amounts for these programs). Whereas eligibility criteria are more inclusive in Hawaii, New York, and California, employees in New Jersey and Rhode Island must meet more restrictive working requirements in the base period. For example, in New Jersey, as of 2016, an eligible employee must have worked 20 calendar weeks and earned at least $8400

during the 52 weeks preceding the claim; in California, an employee need earn only $300 in the 12 months prior to the claim to acquire eligibility.

Benefit amounts, meanwhile, depend on employees' weekly or quarterly average wage during the base period. The wage replacement rate ranges from 50% (New York) to 66% (California); accordingly, the maximum weekly benefit amount for partial wage in 2016 ranges from $170 in New York to $1129 in California. Generally, these programs are funded through employee payroll deductions or contributions by employers. In New York and Hawaii, employers are required to provide the coverage by purchasing insurance or by self-insuring.

Table 1.1.
Eligibility and Benefits for Paid Maternity Leave

State	Eligibility (Base period + earning)	Benefit	Scheme
Hawaii	14 weeks of employment (20 hours or more) with earnings of >$400	58% of the employee's weekly wage (Max $570. 2016)	Employers' purchase insurance (private, state or self-insured)
New York	Four or more consecutive weeks of work for a covered employer	50% of the employee's weekly wage (Max $170, 2016)	Employers' purchase insurance (private, state or self-insured)
California	Earnings of at least $300 for a base period (12 months)	55% of the employee's average weekly earnings (Max $1,129. 2016)	Short-term Disability Insurance (SDI); Payroll deduction
New Jersey	20 weeks of employment with earnings of > $145 per week or > $8,400 per year	Two-thirds of the employee's average weekly wage (Max $615, 2016)	Payroll withholding (employee) and employer contribution
Rhode Island	Earning of > $11,520 during the four of the five complete calendar quarters	4.62% of employee's highest quarter wages (Max $795, 2016)	Paycheck withholding

This table is built upon with TDI rules for states with operating TDI and PFL.
Sources: State of California Employment Development Department, retrieved from http://www.edd.ca.gov/pdf_pub_ctr/de2589.pdf http://www.edd.ca.gov/disability/State_Disability_Insurance_(SDI)_Eligibility.htm; State of Hawaii Disability Compensation Division, retrieved from http://labor.hawaii.gov/dcd/home/about-tdi/; State of New Jersey Division of Temporary Disability Insurance, retrieved from http://lwd.dol.state.nj.us/labor/forms_pdfs/tdi/WPR-119.pdf; New York State Insurance Fund, retrieved from http://ww3.nysif.com/DisabilityBenefits.aspx; http://www.wcb.ny.gov/content/main/offthejob/WhoCovered_DB.jsp
State of Rhode Island Department of Labor and Training, retrieved from http://www.dlt.ri.gov/t

Paid maternity leave and TANF use

The absence of a paid provision in maternity leave has threatened the economic security of low-income families during and after childbirth, compelling many of them to turn to public assistance. Earlier studies on unpaid FMLA have shown that roughly 15% of those taking unpaid or partially paid leave through their employers relied on public assistance (Klerman et al., 2012; Waldfogel, 2001). Given that low-income mothers are less likely to have access to employer-provided leave, to which only 12% of U.S. private sector workers have access, the prevalence of using public assistance for low-income mothers may be higher. State paid maternity leave may ease economic hardships for those who would otherwise have no source of income when taking time off for childbirth, and may thus mitigate low-income female workers' reliance on public assistance.

Only a few studies have explored whether paid maternity leave reduces public assistance use. Houser and Vartanian (2012) found in their policy report that all women in states offering leave were less likely to receive any public assistance or to participate in the Supplemental Nutrition Assistance Program (SNAP). This trend, in turn, could lead to savings at the state level on public assistance programs such as SNAP and TANF (Dube & Kaplan, 2002).

Another line of research questions whether paid maternity leave improves welfare recipient mothers' economic well-being (Stanczyk, 2016; Ybarra, 2012). A significant number of welfare recipient mothers with infants who were eligible for paid maternity leave in California or New Jersey received better financial benefits with welfare (Ybarra, 2012): in this case, paid maternity leave did not offer an attractive alternative to TANF. In fact, California Paid Family Leave program exerted negligible effects on short-term poverty and on short-term improvement of economic well-being (Stanczyk, 2016).

These findings underscore the need for further inquiry into the effects of paid maternity leave on TANF use. Even though paid maternity leave generally benefits low-income families by providing income replacement, the effect of the availability of paid leave on the likelihood of expectant/new mothers turning to TANF partially depends on whether families would be better off financially with TANF or with maternity leave benefits. Paid maternity leave would increase family income for mothers who would otherwise have no income or only partial income during their maternity leave. Conversely, paid leave could potentially increase the amount of time that a worker must survive on less-than-full wages (Bartel et al., 2014; Stanczyk, 2016). Some mothers who would otherwise return to work immediately after childbirth to earn full wages again may decide to take leave with partial payment and end up turning to TANF.

Such considerations make a compelling argument for examining the extent to which the influence of paid maternity leave on low-income mothers' TANF use varies in accordance with the differing state stipulations governing the two programs. In states that provide generous TANF benefit amounts but relatively short-term and stringent paid maternity leave benefits, the effect of paid leave on TANF use for low-income mothers may be relatively minor, as many mothers who are eligible for paid maternity leave are likely to decide to participate in TANF. It is thus necessary to identify the specific program rules as well as the conditions under which paid maternity leave policy might most effectively mitigate TANF use.

Intersection between maternity leave and TANF

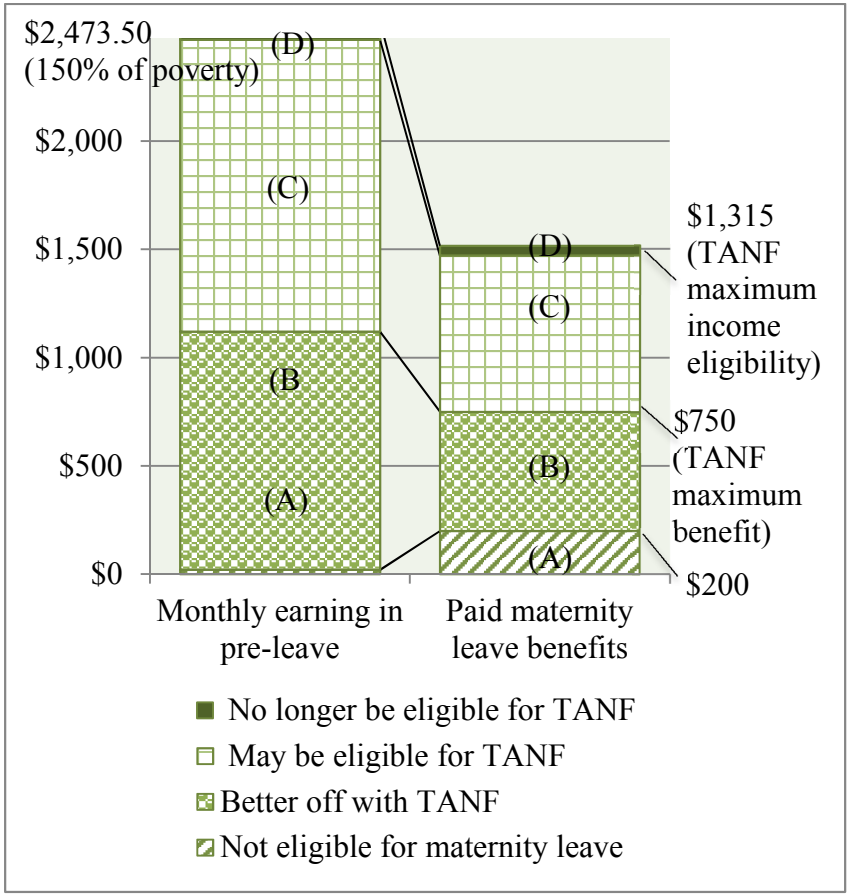
The following hypothetical consideration uses different sets of paid maternity leave and TANF rules in California and New Jersey to identify those who are most likely to be affected by paid maternity leave among low-income working single mothers with two children. These two state programs represent antipodes of a generous paid maternity leave policy (California) and a

restrictive one (New Jersey). As the previous section illustrates (Table 1.1), California's paid leave is likely to provide more low-income mothers with broader coverage than the other four states, whereas New Jersey has markedly less inclusive eligibility criteria.

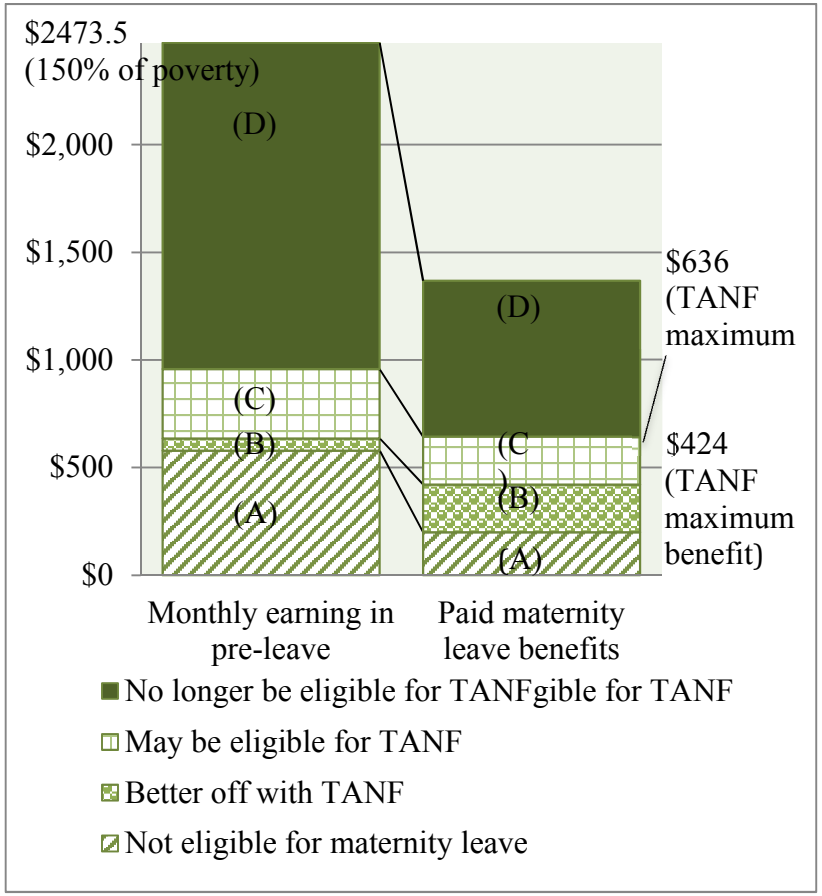
Figure 1.1 shows low-income single mothers' monthly wages of up to $2473.5 (150% of 2014 gross monthly poverty level) and their corresponding (expected) monthly paid maternity leave benefit amounts in California. Mothers in group A are not eligible for paid maternity leave because they do not meet the working requirements during the base period. Those in group B, while likely to be eligible for paid maternity leave, are expected to use TANF instead (or to combine TANF and paid maternity leave benefits) because their paid leave benefits are less than TANF maximum benefit amounts. Mothers in group C are likely to be better off with maternity benefits, but may still be eligible for TANF as their maternity leave benefit amounts do not exceed TANF maximum income eligibility. The last group D represents those who are better off with paid maternity leave because their paid leave amounts are larger than the maximum TANF benefit amounts, rendering them ineligible for TANF. Their paid maternity leave benefits are likely to exceed $1,315, the TANF maximum income eligibility.

It is useful to note that Figure 1.1 presents a hypothetical case, so the actual impact of paid family leave may differ to some extent due to individual preferences, experiences or knowledge, or the actual take-up rate of paid maternity leave. The actual impact of paid maternity leave on TANF use may be minor if low-income mothers have difficulty accessing the maternity leave program. Low-income mothers are also less likely to be aware of family leave programs (Milkman & Appelbaum, 2004), which may negatively influence their take-up rate. Figures 1.1 is adapted and modified from Ybarra's work (2013) and calculated based on year 2014 TANF rules, 2014 paid maternity leave rules, and the 2014 federal poverty level. In

estimating TANF benefit amounts and eligibility, a family size of three is used to account for varying TANF income eligibility and benefit amounts by family size. The formulation above suggests that paid maternity leave is likely to increase the family income of many low-income mothers following childbirth, especially for the less financially disadvantaged (presented as C and D in Figure 1.1). These are low-income mothers who might have resorted to TANF in the face of unpaid maternity leave, but are less likely to do so if provided with paid maternity leave benefits. Both C and D represent the effect of paid maternity leave on TANF use. However, even though paid maternity leave is likely to reduce the number of TANF recipients, it is not expected to incentivize every eligible low-income mother to turn to paid leave over TANF. This is because some, mostly those in group B, are better off with TANF while others, represented by A, may not be eligible for paid maternity leave. This suggests that current paid maternity leave stipulations influence some potential TANF users, especially those populating the less disadvantaged groups (that is, C and D rather than A and B).



California Hypothetical Expectation



New Jersey Hypothetical Expectation

Figure 1.1.
Hypothetical Expectation of Better-off and Worse-off with Paid Maternity Leave for Low-income Single Mother

A comparison of the hypothetical New Jersey estimate of the relationship between paid maternity leave and TANF to the hypothetical California estimate reveals how different sets of program rules for both paid maternity leave and TANF produce different consequences. Due to stricter paid maternity leave eligibility, the size of group A in the New Jersey case seems much larger than in the California case. Restrictive eligibility criteria exclude many low-income mothers, especially the most disadvantaged, resulting in a not insignificant number of group A mothers in New Jersey (Figure 1.1). However, less generous TANF benefits increase the likelihood of a larger number of group D mothers —those who are better off with paid maternity leave and are no longer eligible for TANF.

Research to date has largely neglected to investigate the effect of paid maternity leave on TANF use for low-income families. Partial wage payment may reduce the likelihood of one's using TANF by providing family income; but it may also increase TANF use by encouraging an extended duration of leave as opposed to a swifter return to full-time work after childbirth. The extent of the effects of paid maternity leave on TANF use may further vary according to the prevailing TANF rules and paid maternity leave rules in a given state. Since significant variation exists in eligibility rules for paid leave among the five states, this study focuses on the extent to which paid maternity leave eligibility interactively influences its impacts on TANF use using two state program rules as examples. This study asks the following questions:

(1) *Does the availability of paid maternity leave reduce TANF use for low-income working mothers following the birth of a child?*

(2) *Does the reduction vary across states according to the leniency of eligibility rules?*

This research not only addresses the lack of research on the effect of paid maternity leave on welfare use for low-income families mentioned above, but also augments the literature by showing the effect of paid maternity leave program rules on low-income mothers' TANF use. By exploring differential impacts of paid leave program rules, this research may also inspire a template for policymakers to design a more comprehensive support program for low-income families during and following childbirth.

Methods

Dataset and Sample

This study uses multiple years (2002–2014) of the cross-sectional dataset from the Current Population Survey (CPS) March Annual Social and Economic Supplement. March CPS data is drawn from a nationally representative sample and provides a broad range of data, including income, employment status, and public assistance program participation, as well as demographic information for each household member.

The sample is narrowed to low-income single mothers because they are most likely to work in low-wage jobs without private (employer-provided) maternity or parenting leave benefits, and to be eligible for TANF after losing employment earnings. A low-income mother is defined here as a mother whose household income is under 150% of the poverty level. I have also narrowed the sample to mothers aged 20 to 35 allowing for the inclusion of those who are more likely to be fertile, and thus to be eligible for or affected by maternity leave. Although the biological mother of a household is marked in the data from 2007 to 2014 (which makes it possible to match mothers to their biological newborns), I found it necessary to estimate the number of biological mothers from 2002 to 2006, as the CPS March supplements from those years did not provide this relationship information. For the purposes of this study, I consider an

adult female between the ages of 20 and 35 years old in a household with a newborn baby as a potential biological mother. This may have the risk of overestimating the number of biological mothers in the case if a child's biological mother does not live together, but it is the best estimate possible with the available data. The sample is further narrowed to low-income mothers aged 20 to 35 whose youngest child is age 0 to 1 for the main analysis. The final sample differs in terms of the definition of the treatment and comparison groups as determined by paid maternity leave program rules. The following provides an explanation.

Analytic model

I employ a Difference-in-Difference (DD) design with robust standard error logistic regression to estimate the effects that paid maternity leave has on TANF use in low-income single female-headed families with newborn children. The outcome of interest is whether mothers did or did not receive TANF during the year in which they gave birth to a child. The dichotomous nature of TANF participation is associated with a logistic model. DD approach creates comparisons between similar individuals who experience different policy conditions in order to estimate the effects of those policies—in this case, state paid maternity leave—on a particular outcome. In other words, residence in five states (California, Hawaii, New Jersey, New York, and Rhode Island) that offer financial pregnancy-related benefits through TDI or PFL is considered as the treatment. Among the five treatment states, differences exist between the states' paid maternity leave program rules for protecting pregnancy, affecting the size of those who are likely to be impacted by a program and the likely consequences of the program. The paid maternity leave programs of two states, California and New Jersey, are selected as representative of a generous or restrictive paid maternity leave policy, respectively. This allows estimating a range of effects associated with more generous (California) and more restrictive

(New Jersey) policies. It is assumed that treatment states follow either the California or New Jersey program rules. The effects of five different eligibility rules can be tested with samples for each state. The sample size, however, does not allow for empirical examination due to the lack of statistical power to discern significance.

Having two different sets of analysis with different eligibility rules impacts the construction of adequate treatment and comparison groups. The DD approach calculates whether two groups—the treatment group (eligible for treatment) and the comparison group (excluded from treatment) – evince significant differences based on whether or not the state of residence offers paid maternity leave. This approach assumes that the difference in TANF use between the treatment and comparison group is constant across states with the treatment. It is important to note that this study does not examine the effects of policy change. Despite the fact that DD is often used to examine such effects (Berger & Waldfogel, 2004; Rossin-Slater et al., 2013), it can also be applied to compare estimates of the treatment effect under different policy treatments, in this case, states with paid maternity leave policy versus states with no paid maternity leave policy.

The treatment group, the population affected by treatment, comprises mothers who are eligible for paid maternity leave, defined as 20- to 35-year-old low-income single mothers who meet paid maternity leave eligibility criteria and have a child less than one year of age. Mothers with children between the ages of 0 to 2 months would define the ideal treatment group because the length of paid maternity leave provided in the five states is usually 6 to 8 weeks. However, the lack of detailed information about the date of childbirth in March Supplement CPS records precludes the use of this definition. Instead, I select for the treatment group in the analysis mothers with a newborn child aged “0” in the household in each year because March CPS

documents participants' ages on the basis of years (not months). I assume that using this age restriction may find the lower bound of the net effect of paid maternity leave because some mothers of the treatment group in the analysis are unlikely to use maternity leave.

The treatment group for generous paid maternity leave is defined as 20- to 35-year-old low-income single mothers who worked in the last year, earned at least $300 for their longest-held job in that time, are still in the labor force this year, and whose youngest child is aged 0. The treatment group for restrictive paid maternity leave is defined as 20- to 35-year-old low-income single mothers who worked in the last year, earned at least $8400 for their job in that time, are still in the labor force this year, and whose youngest child is aged 0.

Finding a comparable comparison group is crucial to DD. The best comparison groups are as similar as possible to the treatment group but unaffected by the policy under investigation (Hill, 2012). The comparison group in this study is defined as 20- to 35-year-old low-income single mothers whose working experiences are likely to meet eligibility criteria for paid maternity leave, but whose youngest children are aged 1. By definition, they would not be influenced by the availability of paid leave, but otherwise they are similar to the treatment group. The significant difference between the treatment group and the comparison group lies in the age of the youngest children. Mothers whose youngest child is aged 1 are less likely to use maternity leave, suggesting they are less likely to be affected by the program. They still meet the requirement in that the comparison group should be as similar as possible to the treatment group, sharing similar characteristics with mothers whose youngest children are aged 0.

Following the two eligibility rules, two different comparison groups are defined for two sets of analysis. The generous eligibility comparison group is defined as 20- to 35-year-old low-income single mothers who worked in the last year, earned at least $300 for their job in that time,

are still in the labor force this year, and whose youngest child is aged 1. Another comparison group for restrictive eligibility is defined as 20- to 35-year-old low-income single mothers who worked in the last year, earned at least $8400 for their job in that time, are still in the labor force this year, and whose youngest child is aged 1.

The estimation model follows:

$$Yist = \beta_0 + \beta_1 \times \text{Mother}_{it} + \beta_2 \times \text{Mother}_{st} \times \text{Paid maternity leave}_{st} + \beta_3 \times \text{Paid maternity leave}_{st} + \beta_x X_{ist} + \beta_p P_{st} + \beta_s S_{it} + \beta_t T_{is} + \varepsilon_{ist},$$

where i indexes individuals, s states, and t years. Y captures whether an individual *i* reports that any of her household members received TANF. Paid maternity leave$_{st}$ indicates the availability of paid maternity leave in state *s* and year *t*. The coefficient of β_2, or the interaction effect between mothers who are eligible for paid maternity leave (treatment group) and the existence of paid maternity leave in a state of residence (treatment), quantifies the effect of paid maternity leave for the treatment group on TANF use. X_{ist} is a vector of maternal and family characteristics such as age, education, race, and number of family members. P_{st} is a vector of state policy and economic contexts such as unemployment rate, welfare generosity index, and state TANF exemption policy. S_{it} represents state fixed-effects; it is also included to control for any unobserved time-invariant differences between states. This is a standard approach with DD models (Angrist & Pischke, 2009; Hill, 2012; Rossin-Slater et al., 2013). Fifty states, excluding the District of Columbia, are included to control for serial correlation among treatment groups. To control for differential time trends in public assistance program use, year fixed effects, T_{is} is included in the model.

Variables

CPS asks whether at any time during the past year, even for one month, anyone in a household received any type of public assistance, including TANF. TANF use is measured by whether a household received welfare (TANF). Welfare participation is reported retrospectively, but interviewees are not asked to report the specific date on which the family received welfare.

In order to address the effects of TANF rules on TANF participation, several regressors related to TANF rules are included. First, I use the state welfare effort index (Meyers, Gornick, & Peck, 2002; Rodgers, Beamer, & Payn, 2008) as a proxy of TANF generosity due to the lack of a composite measure of TANF generosity for both benefit and eligibility rules. State generosity measures the generosity of benefits as assessed by inclusiveness (the extent to which benefits are made available to those in need), state policy commitment (a series of measures of the quality, accessibility), and availability of assistance programs for families). The index analyzes all fifty states, excluding the District of Columbia, giving each state a score ranging from 0 (least generous) to 4 (most generous).

Second, I include state TANF exemption policy for work-related activities when participants are caring for a child in the analysis. Having no work exemption can possibly be associated with a full-time work rate among mothers with lower education levels (Hill, 2012). TANF work exemption policies such as the existence and length of exemptions were adapted from the Welfare Rules Databook for years 2002–2014 (Kassabian et al., 2011; Kassabian, Whitesell, & Huber, 2012; Kassbian et al., 2013; Rowe, Murphy, & Kaminski, 2008; Rowe, Murphy, & Moon, 2010; Rowe, Murphy, & Williamson, 2006; Rowe & Murphy, 2006, 2009; Rowe & Russell, 2004; Rowe & Versteeg, 2005). The absence of state TANF work-related exemptions for childcare is coded as 0. The existence of such a provision is coded as 1.

A set of demographic characteristics is controlled for, such as mothers' age, race (white, black, Hispanic, other), educational level (less than high school, high school completion, some college but no degree, Bachelor's degree or higher), and number of family members. I also control for state characteristics such as state unemployment rate and state welfare efforts. State unemployment rates reflect state economic conditions and are retrieved from the Bureau of Labor Statistics for each year.

Results

Descriptive analysis

Table 1.2 presents weighted summary statistics for both treatment groups and comparison groups using two different sets of paid maternity leave eligibility (i.e., generous and restrictive). Overall, there are nearly no major differences between the treatment and comparison group for each of the two sets of eligibility, which justifies the selection of the comparison groups. The only notable difference is found in the mean age of low-income mothers in the generous eligibility group (A). The comparison group is likely to be older (25.5 years of age) than the treatment group (25.1 years of age), but given that the comparison group's children are older than those of the latter, this difference is to be expected.

Table 1.2.
Weighted Population Statistics for Low-income Mothers

	Generous Eligibility (A)		Minimal Eligibility (B)	
	Control	Treatment	Control	Treatment
State maternity leave type				
No paid leave	85.7	86.3	86.5	85.5
Paid maternity leave	14.3	13.7	13.5	14.5
Education				
Under HS	22.1	21.8	19.5	19.6
HS	42.9	42.7	44.3	43.2
Some College	25.4	26.7	25.1	25.8
College	9.7	8.8	10.6	11.6
Race				
White	41.9	44.4	39.5	42.2
African American	32.4	30.0	33.4	29.9
Hispanic	21.1	21.0	22.3	23.0
Other race	4.7	4.7	4.8	4.9
Age (Mean)	25.5	25.1 **	26.1	25.8
Number of family members	3.0	3.0	3.2	3.1
Total	2170	2098	1189	1076

Source: Current Population Study, March Economic Supplement, 2002–2011
Note: Control- Control group; Treatment- Treatment group; Generous eligibility – California; Restrictive eligibility – New Jersey
Treatment groups are mothers who are likely to be eligible for maternity leave who have a newborn baby for CA and NJ PFL respectively. Comparison group are mothers who are likely to be eligible for maternity leave and who have children age one year old.
$^{+}$ p < .1; * p < .05; ** p < .01; *** p < .001

Logistic regression estimates with DD

Table 1.3 shows the estimated logistic regression odds ratio for models that predict TANF use for low-income families headed by single mothers. These models estimate differences in TANF use between the treatment group and the comparison group in states offering paid maternity leave after accounting for differences in TANF use between the treatment group and the comparison group in states with no paid maternity leave. The interaction between the

treatment group and paid maternity leave, presented as an odds ratio, captures the DD estimates for the net treatment effect and demonstrates the effect of paid maternity leave on those likely to be eligible for it. In other words, the interaction illustrates the odds of a person using TANF if residing in a state that offers paid maternity leave, accounting for the differences in TANF use between the treatment group and the comparison group in states with no paid leave. For example, if paid maternity leave substitutes for TANF use, we expect this effect—presented as the odds ratio of interaction—to be below 1, with lower odds of a mother being on TANF if paid maternity leave is an option. That is, if paid leave provides low-income women with sufficient financial support, we would expect to observe a lower probability of enrollment in TANF in states with paid leave benefits, i.e., in the "treatment" condition.

Table 1.3.
Difference-in-Difference Logistic Regression Results Predicting TANF Use for Low-income Mothers, Controlling for Background and State Characteristic Variables (Odds Ratio)

	(1) CA Eligibility	(2) NJ Eligibility
Paid maternity leave × Treatment group	.590 **	.304 ***
Treatment group	1.079	1.077
Residence in paid maternity leave states	1.528 *	1.914 *
df	26	26
χ^2	191.65	221.17

Note: Controls are education, age, race, family size, state unemployment rate, state welfare generosity, state TANF exemption, year fixed effects (2002-2014), and state fixed effects (omitted from the table).

Source: Current Population Survey March Supplement 2002–2011; Work-related exemption when caring for a child under X months from Welfare Rules Databook: State TANF Policies (2002–2014); U.S. Bureau of Labor Statistics (2014) retrieved from http://www.bls.gov/lau/.

* $p < .05$; ** $p < .01$; *** $p < .001$

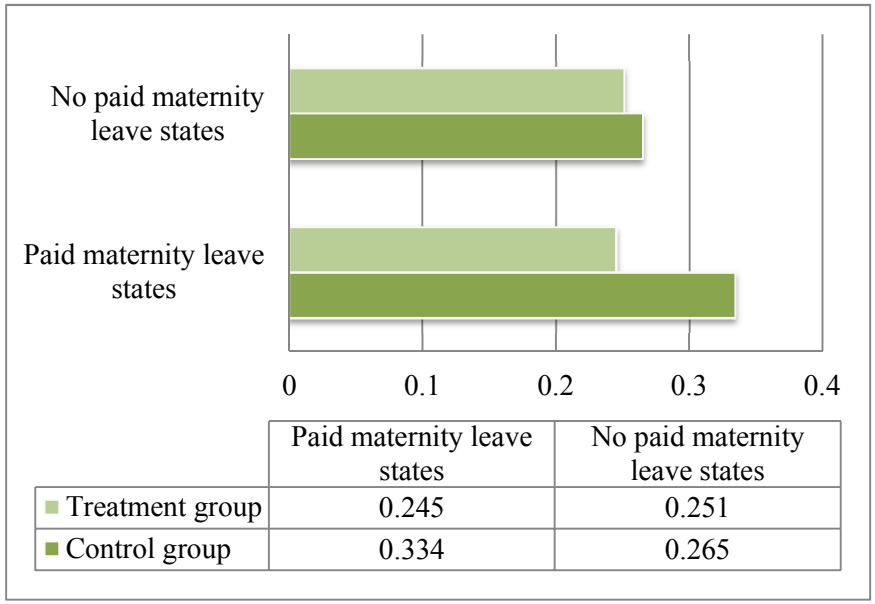
Because DD estimates in logistic regression are not easy to interpret, Figure 1.2 presents the probability of using TANF for the treatment group and the comparison group by different eligibility criteria. Overall, this shows how the existence of paid maternity leave affects TANF use in low-income mothers who are likely to be eligible for paid leave. The probability is estimated based on a hypothetical low-income 20-year-old African American single mother with less than a high school education and a working history that meets paid leave eligibility. The age of this hypothetical person's youngest child varies by group affiliation (treatment or comparison group).

Using generous (California) eligibility criteria, in paid maternity leave states, the hypothetical 20-year-old single mother mentioned above who is likely to be eligible for paid leave and has a child aged 0 has a much lower probability of using TANF (0.245) than another similar hypothetical person from the comparison group – a low-income 20-year-old African American single mother with less than a high school education and similar working experiences, but who has a child aged 1 (0.334) (Figure 1.2). This probability is still lower compared to a counterpart in the treatment group in a state with no paid maternity leave (again, a low-income 20-year-old African American single mother with less than a high school education who is likely to be eligible for paid leave and has a child aged 0) (0.251), or to a member of the comparison group in a state with no paid maternity leave (a low-income 20-year-old African American single mother with less than a high school education who meets the working requirement for paid leave but has a child aged 1) (0.265). In fact, the treatment group in paid maternity leave states (treatment states) has the lowest probability of using TANF.

Figure 1.2 which shows TANF use probability with restrictive leave eligibility, indicates a finding similar to that of the generous eligibility case in that TANF use for the treatment group

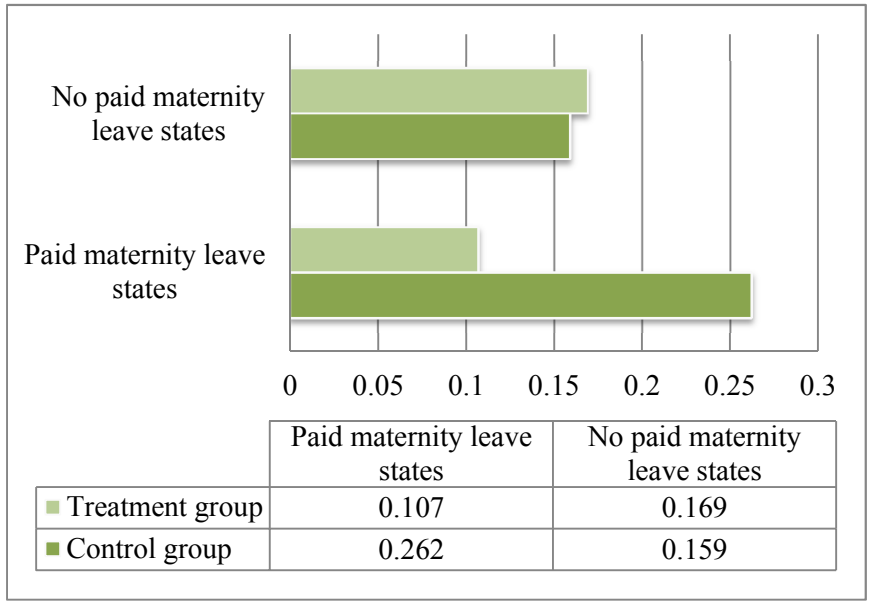
in states with paid maternity leave was significantly less likely. In such states (treatment), a low-income 20-year-old African American single mother with less than a high school education who is likely to be eligible for paid maternity leave and has a child aged 0 has a much lower probability of using TANF (0.107) than an identical person, differing only in the age of her child, from the comparison group – that is, a low-income 20-year-old African American single mother with less than a high school education who meets the working requirements but whose youngest child is aged 1 (0.262) (Figure 1.2). Assuming that the difference in probability of using TANF between the treatment group and the comparison group in states with paid maternity leave would be constant across states, this difference in probability between the treatment and the comparison group (.155) in states with paid leave is significantly large compared to that in states without paid leave (.010). The probability of using TANF for the treatment and the comparison group in the treatment states should be constant when there is no treatment effect.

The overall probabilities of TANF use amid restrictive eligibility criteria are lower than those involving generous eligibility criteria. This is because restrictive eligibility criteria for low-income mothers exclude many of the most disadvantaged. Fewer people in both the treatment and the comparison group are eligible for TANF, thus lowering the overall probabilities of TANF use.



	Paid maternity leave states	No paid maternity leave states
Treatment group	0.245	0.251
Control group	0.334	0.265

Figure 1.2.1. Generous leave eligibility (California)



	Paid maternity leave states	No paid maternity leave states
Treatment group	0.107	0.169
Control group	0.262	0.159

Figure 1.2.2. Restrictive leave eligibility (New Jersey)

Figure 1.2.
Probability of Using TANF for a Hypothetical Person using California and New Jersey Paid Maternity Leave Eligiblity Rules

Probabilities are estimated based on hypothetical person of a low-income single mother who is age at 20, African American, and has under high school education; Treatment group is low-income mothers who are eligible for either California or New Jersey paid maternity leave eligibility criteria and who have an infant; Comparison group is low-income mothers who meet the eligible criteria (working experiences) for California or New Jersey paid maternity leave eligibility and who have at least a toddler age of 1; Paid maternity leave states are CA, NJ, NY, HI, and RI and no paid maternity leave states are forty five states without five states above.

Sensitivity test

Table 1.4 presents the results of various sensitivity tests for the main results controlling other covariates used in the previous regression with a number of alternative specifications. Overall sensitivity test results are consistent with the main results, indicating that paid maternity leave reduces TANF use for low-income families, regardless of specific model choices.

First, in order to examine the potential effect of the Great Recession, I ran separate pre- and post-recession analyses. Whether or how the recession in 2007 influenced the effects of paid maternity leave on TANF use is not clear in the current literature. Worsening labor market conditions may have caused low-income female workers to lose eligibility for paid maternity leave (by cutting their work time or by increasing unemployment), or longer unemployment may have led many of them to rely on TANF. On the other hand, states may have responded to recession-spawned financial constraints by limiting their TANF generosity, causing many low-income mothers to become ineligible. Post-recession effects of paid maternity leave are significant (OR = .563, $p < .10$; OR = .329, $p < .05$), whereas the pre-recession effects of paid leave are not significant for either generous or minimal eligibility cases. This suggests that paid maternity leave has played a role in reducing TANF use in the post-recession period.

Second, I conducted logistic regressions that omit California cases because of the possibility that California drives the results. Without California, paid maternity leave is associated with less use of TANF amid both generous eligibility (A) (OR = .508, $p < .05$) and minimal eligibility (B) (OR=.180, $p < .001$).

Third, another sets of sensitivity tests use alternative comparison groups. Selection of comparison groups is based on children's age because women's labor force participation and TANF use is sensitive to the presence and ages of children. Identifying one or more comparison

groups is a key factor in the internal validity of DD estimates (Han, Waldfogel, & Brooks-Gunn, 2001; Hill, 2012; Rossin-Slater, Ruhm, & Waldfogel, 2013).

I identify different alternative comparison groups with specification in child age for two separate analyses (youngest child aged 2 or 3, respectively) in order to account for potential measurement errors. Women are surveyed in March of the following the calendar in which year that they may have received welfare. Mother with infant in the time of survey means that most of them would have given a birth last year but some of them may have given a birth in the survey year. Even though a mother who has a 1-year-old child is most comparable to a mother with an infant, that is the treatment group, it is possible some women who have a 1-year-old child in March might have had a newborn in the prior year and have received welfare. Using a different comparison group, with children aged 2 amid generous eligibility criteria, the odds ratio of the state paid maternity leave is less than 1 but is not statistically significant. However, using restrictive eligibility, the effect of paid maternity leave on TANF use is significant (OR=.379, $p< .05$). The effects of paid leave are also significant for alternative comparison group 2, whose youngest child is aged 2, for only generous eligibility criteria (OR = .511, $p < .001$ for (A)).

Fourth, the linear probability model is estimated using the same comparison group with the main analysis. Even if the dependent variables are dichotomous and do not meet the assumptions of normality, due to the difficulty of interpretation, the linear probability model is sometimes used as an alternative (Hill 2012). The results from the linear probability model find significant effects of paid maternity leave (b = -.078, $p < .001$ for (A); b =-.065, $p<.001$ for (B)).

Fifth, the main model controls state welfare efforts as a proxy of the composite measure of the overall accessibility and generosity for TANF. For sensitivity analysis I instead use maximum TANF benefit amounts for a family of three with no income. TANF maximum benefit

amounts may not be a sufficient measure for TANF program rules because it does not include TANF eligibility. However, it captures whether TANF maximum benefits influence the role of paid maternity leave.

It is useful to note that during the study period, some states extended their protection from pregnancy support through TDI to a combination of TDI and PFL. California, New Jersey, and Rhode Island still routed wage replacement through TDI programs for pregnancy disability and have introduced PFL initiatives covering time off for caring for ill family members and for new and adopted children. These changes do not affect the study design because PFL in three states can be considered as an extension of paid maternity leave, not altering the fact that these states are paid maternity leave states. It may, however, both the treatment and the comparison group can be affected by PFL extension. California's PFL initiative has increased the rate at which women participate in PFL. This effect may be more pronounced among low-income groups (Rossin-Slater, Ruhm, & Waldfogel, 2013). It is possible for a mother who gave birth to a child (treatment group) to use PFL for parental leave purposes to bond with their child after taking a maternity leave through TDI in the above three states. So more generous program coverage may lead to higher participation in paid maternity leave, rendering a more sizable effect. In this case the estimate for paid maternity leave provides the upper bound of the net effect of paid maternity leave. Theoretically, it may be possible to estimate the net effect of paid maternity leave with only two states, Hawaii and New York, with the exception of the three states operate both TDI and PFL (California, New Jersey, Rhode Island), but this sample size would not allow enough statistical power. On the other hand, in the three states with both TDI and PFL, comparison groups may use PFL to care for an ill child, affecting their TANF participation. Such cases have not been very common until now, as the statistics indicate (State

of California Employment Development Department 2014), so it is reasonable to expect that a different program, PFL, does not affect the comparison group. If there are many cases for this in reality, this study presents a more continental estimate of the net effect of paid maternity leave.

Introduction of PFL for three states may influence the effect of paid maternity leave, as discussed above. In order to explore whether the introduction of PFL influences the overall effect of paid maternity leave, I ran two separate pre- and post-PFL analyses. Prior to the introduction of PFL is the period from 2000 to 2004 for California and from 2000 to 2009 for New Jersey. Post PFL is the period from 2005 to 2014 and for 2010 to 2014, respectively, for California and for New Jersey. The effect of TDI before the introduction of PFL is significant in generous model using California eligibility, confirming that TDI played a role in reducing TANF reliance as paid maternity leave (OR = .543, $p<.05$). Minimal model using New Jersey eligibility, where significance is found only for post-PFL, suggests that the average effect of paid maternity leave may be sensitive to program rule conditions, that is, that more generous program rules by expansion of PFL may have bigger effects specifically in the minimal model.

Finally, I conducted further analysis using all single mothers in order to address potential selection issue. The main analysis limited the sample to mothers who are in the labor force and meet the working requirements for paid maternity leave. Given that paid maternity leave may affect whether one stays or exit the labor force around her childbirth, the analysis may create sample selection bias. The effects of paid maternity leave for all single mothers still hold significant (OR = .799, $p < .05$).

Table 1.4.
Sensitivity Test

	Generous Paid Maternity Leave Eligibility (A)	Minimal Paid Maternity Leave Eligibility (B)
No CA	.508 *	.180 ***
Comparison1 (children age 2)	.697	.379 *
Comparison2 (children age 3)	.511 ***	.296 **
Before Great Recession (<2007)	.633	.442
After Great Recession (≥2007)	.619 +	.329 *
Linear probability (*b*)	-.078 ***	-.065 ***
Control TANF maximum benefits	.578 **	.439 **
Prior to the introduction of PFL	.540 **	1.60
Post PFL	.593 *	.411 **
All single mothers		.799 *

For all models except "Control TANF maximum benefits", the same covariates from the main analysis - logistic regression analysis with DD- are used. "Control TANF maximum benefit model" includes maximum TANF benefit amounts for a family of three with no income instead of welfare generosity. With the exception of the linear probability model, all models present odds ratios. Prior to the introduction of PFL is the period from 2000 to 2004 and from 2000 to 2009, respectively, for California and for New Jersey. Post PFL is the period from 2005 to 2014 and for 2010 to 2014, respectively, for California and for New Jersey. Both models run without the four other states that have paid maternity leave. The model for all single mothers is not conditional on labor force and working histories, and thus neither generous (A) nor minimal (B) eligibility criteria does apply.

$^{+}$ $p < .01$; * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

This study examines the effect of paid maternity leave on low-income families' TANF use. The findings suggest that availability of paid maternity leave is associated with lower use of TANF. This in turn suggests that paid leave guarantees some measure of family income for many low-income single mother households following childbirth. With the wage replacement available via paid maternity leave, low-income mothers are less likely to rely on TANF benefits, which use often afflicts its dependents with strict working requirements, lifetime limits, negative connotations, and social stigma. If paid maternity leave could secure the economic status of low-income female workers, they could opt out of using TANF to ease economic constraints during maternity leave. This economic benefit would improve short-term maternal economic well-being around childbirth and long-term self-sufficiency for reducing an initial entry to TANF that might be associated with future use. This finding further suggests savings for state expenditure on TANF program. For example, in a related analysis, Kang, Meyer, and Romich (2016) estimated cost savings for one state for TANF using the same methodology with almost identical sample and found an introduction of paid family leave would decrease TANF benefit expenditures by $728,805 to $904,854 annually.

My analysis finds that paid maternity leave with more restrictive eligibility criteria exerts a more profound effect on the decline in TANF use. The effect of paid state maternity leave is more substantial for the model using New Jersey rules than for the California model, even if the magnitude of significance may not be directly comparable. California rules confer eligibility on women earning at least $300 from one job in the prior year, while eligibility in New Jersey mandates at least 20 weeks of work and earnings of $8400 in the prior year, as well as labor force participation at the time of the leave. This finding, however, should not be interpreted as

meaning that low-income single mothers would be better off with restrictive eligibility criteria. Rather, the counterintuitive finding that restrictive paid maternity leave eligibility exerts a greater effect on TANF use may result from the fact that restrictive rules exclude many low-income mothers who are not likely to be eligible for paid maternity leave or would not receive a paid leave benefit that approaches or exceeds TANF benefit amounts. On the contrary, the analysis with generous eligibility includes some mothers who are likely to use TANF because maternity leave benefits are not sufficient to opt out of welfare. This answers the current puzzle in the literature that finds two competing explanations regarding the effect of paid maternity leave on TANF use. Overall paid maternity leave improves low-income mothers' economic well-being (Houser & Vertanian, 2012), but when it comes to the most vulnerable population, in particular welfare mothers and mothers living in poverty, paid maternity leave does not exert enough power to improve their economic well-being (Stanczyk, 2016; Ybarra, 2012) or to cause them to avoid reliance on TANF due to insufficient benefit amounts

The finding further suggests various program rules that might be used to provide low-income mothers with economic support during the inevitable job interruption after childbirth. This may prove beneficial to policy formulation in other states, some of which have passed paid family leave laws (Washington, for example) or are considering such legislation. For example, a flat benefit level might be considered for the most disadvantaged low-income mothers due to its redistributive effects. Benefits of the current paid maternity leave policies in the five states cited in this study are based on average previous weekly wages, so the amount of this partial pay may provide scant help for the most disadvantaged mothers. All of the paid maternity leave states have constructed their programs as either a social insurance platform or via employers' mandatory purchase of insurance (whose premiums are paid by employees and/or employers).

For small businesses, the government may partially subsidize employee/employer contributions in order to protect low-income families. Officials in states considering paid maternity leave legislation could incorporate various permutations of program rules in designing their own states' leave policies.

This study underscores the importance of examining the intersection between paid maternity leave and TANF use in order to understand the actual impact of the former. Empirical examination of both the California and New Jersey cases indicates that the generosity of paid maternity leave eligibility rules interactively influence the impact of paid maternity leave on TANF use. Nonetheless, several limitations exist. First, this study does not consider maternity leave benefit levels to empirically estimate the effects of paid maternity leave rules but only takes into account eligibility rules. Future studies may also investigate the role of paid maternity leave benefit levels. Theoretically, each of the five state cases cited herein could be used to examine the effect of different sets of paid leave rules such as inclusive coverage and generous benefits or less inclusive coverage and low benefits. The sample size, however, does not allow for empirical examination of the effects of program rules in each of the five states because it does not reach the point of statistical significance.

Whether paid maternity leave's reduction of TANF use is a short-term effect or not, that is, whether mothers return to work or go on welfare after they use paid maternity leave, is an interesting question to be answered in a future study. The current study, which is anchored in cross-sectional data, does not allow us to address this question. Future research could also investigate the types of public assistance programs that economically vulnerable working mothers rely on during maternity leave to cope with wage loss and to examine whether paid maternity leave also influences the use of other means-tested programs for low-income families.

This would provide detailed and descriptive information on low-income mothers' economic experiences around the time of childbirth and shed new light on the intersections among paid maternity leave and various public assistance programs.

References

Angrist, J. D., & Pischke, J. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton, NJ: Princeton University Press.

Bartel, A., Baum, C., Rossin-Slater, M., Ruhm, C., & Waldfogel, J. (2014). *California's paid family leave law: Lessons from the first decade.* Washington, DC: U.S. Department of Labor. Retrieved from https://www.dol.gov/wb/resources/california_paid_family_leave_law.pdf

Bartel, A., Rossin-Slater, M., Ruhm, C., Stearns, J., & Waldfogel, J. (2016). Paid family leave, fathers' leave-taking, and leave-sharing in dual-earner households. NBER Working Paper No. 21747, National Bureau of Economic Research.

Berger, L. M., Hill, J. & Waldfogel, J. (2005). Maternity leave, early maternal employment and child health and development in the U.S. *Economic Journal* 115, 29–47.

Berger, L. M. & Waldfogel, J. (2004). Maternity leave and the employment of new mothers in the United States. *Journal of Population Economics, 17*(2), 331–349.

Cantor, D., Waldfogel, J., Kerwin, J., Wright, M. M., Levin, K., Rauch, J., & Kudela, M. S. (2001). Balancing the needs of families and employers: Family and medical leave surveys. Retrieved from https://www.dol.gov/whd/fmla/toc.pdf

Danziger, S. K. (2010). The decline of cash welfare and implications for social policy and poverty. *Annual Review of Sociology*, *36*, 523–545.

Dube, A. & Kaplan, E. (2002). Paid family leave in california: An analysis of costs and benefits. Retrieved from http://paidfamilyleave.org/pdf/dube.pdf

Duncan, G. J., Magnuson, K., & Votruba-Drzal, E. (2014). Boosting family income to promote child development. *The Future of Children, 24*(1), 99–120.

Han, W-J., Waldfogel, J. & Brooks-Gunn, J. (2001). The effects of early maternal employment on later cognitive and behavioral outcomes. *Journal of Marriage and Family, 63,* 336–354.

Han, W-J., Ruhm, C., & Waldfogel, J. (2009). Parental leave policies and parents' employment and leave-taking. *Journal of Policy Analysis and Management, 28*(1), 29–54.

Hill, H. D. (2012). Welfare as maternity leave? Exemptions from welfare work requirements and maternal employment. *Social Service Review, 86*(1), 37–67.

Hill, J. L., Waldfogel, J., Brooks-Gunn, J., & Han, W-J. (2005). Maternal employment and child development: A fresh look using newer methods. *Developmental Psychology, 41,* 833–850.

Hofferth, S. L., & Curtin, S. C. (2006). Parental leave statues and maternal return to work after childbirth in the United States. *Work and Occupations, 33*(1)*,* 73–105.

Houser, L. & Vartanian, T. (2012). *Policy matter: Public policy, paid leave for new parents, and*

economic security for U.S. workers. Retrieved from http://www.nationalpartnership.org/research-library/work-family/other/policy-matters.pdf

Houser, L. & White, K. (2012). *Awareness of New Jersey's family leave insurance program is low, even as public support remains high and need persists (*CWW Issue Brief), Rutgers Center for Women and Work. Retrieved from http://www.njpp.org/assets/reports/work-wages/fliissuebrief.pdf

Huber, E., Kassabian, D. & Cohen, E. (2014). *Welfare rules databook: State TANF policies as of July 2013* (OPRE Report 2014-52), Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Huber, E., Cohen, E., Briggs, A. & Kassabian, D. (2015). *Welfare Rules Databook: State TANF Policies as of July 2014* (OPRE Report 2015-81). Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Kang, J., Meyers, M., & Romich, J. (2016). *The effect of state paid maternity leave on TANF and SNAP use*. Retrieved from: http://www.governor.wa.gov/sites/default/files/documents/2016-11-22_WAPaidLeave_UW_Final_Report.pdf

Kassabian, D., Vericker, T., Searle, D., & Murphy, M. (2011). *Welfare rules databook: State TANF policies as of July 2010*. Washington, DC: The Urban Institute.

Kassabian, D., Whitesell, A., & Huber, E. (2012). *Welfare rules databook: State TANF policies as of July 2011* (OPRE Report #2012-57), Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Kassabian, D., Huber, H., Cohen, E., & Giannarelli, L. (2013). *Welfare rules databook: State TANF policies as of July 2012* (OPRE Report 2013-27), Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Klerman, J. A., Daley, K., & Pozniak, A. (2012). *Family and Medical Leave in 2012: Technical report*. Cambridge, MA: Abt Associate Inc.

Laughlin, L. (2011). *Maternity leave and employment patterns: 2006–2008* Washington, DC: U.S. Census Bureau. Retrieved from https://www.census.gov/prod/2011pubs/p70-128.pdf

Lester, G. (2005). A defense of paid family leave, *Harvard Journal of Law and Gender, 28*(1)*,* 1–83.

Meyers, M. K., Gornick, J. C., & Peck, L. R. (2002). Packaging support for low-income families: Policy variation across the United States. *Journal of Policy Analysis and Management, 20*(3)*,* 457-483.

Rodgers, H. R., Beamer, G., & Payne, L. (2008). No race in any direction : State welfare and income regimes. *The Policy Studies Journal, 36*(4), 525-543.

Rossin-Slater, M., Ruhm, C. J., & Waldfogel, J. (2013). The effects of California's paid family leave program on mothers' leave-taking and subsequent labor market outcomes. *Journal of Policy Analysis and Management, 32*(2), 224–245.

Rowe, G., & Murphy, M. (2006). *Welfare rules databook: State TANF policies as of July 2006*. Washington, DC: The Urban Institute.

Rowe, G., & Murphy, M. (2009). *Welfare rules databook: State TANF policies as of July 2008*. Washington, DC: The Urban Institute.

Rowe, G., Murphy, M. & Kaminski, J. (2008). *Welfare rules databook: State TANF policies as of July 2007*. Washington, DC: The Urban Institute.

Rowe, G., Murphy, M. & Moon, E. Y. (2010). *Welfare rules databook: State TANF policies as of 2009*. Washington, DC: The Urban Institute.

Rowe, G., Murphy, M., & Williamson, M. (2006). *Welfare rules databook: State TANF policies as of July 2005*. Washington, DC: The Urban Institute.

Rowe, G., & Russell, V. (2004). *Welfare rules databook: State TANF policies as of July 2002*. Washington, DC: The Urban Institute.

Rowe, G., & Versteeg, J. (2005). *Welfare rules databook: State TANF policies as of July 2003*. Washington, DC: The Urban Institute.

Shaefer, H. L., & Edin, K. (2013). Rising extreme poverty in the United States and the response of federal means-tested transfer programs. *Social Service Review*, *87*(2), 250–268. http://doi.org/10.1086/671012

Shaefer, H. L., & Ybarra, M. (2012). The welfare reforms of the 1990s and the stratification of material well-being among low-income households with children. *Children and Youth Services Review*, *34*(9), 1810–1817. http://doi.org/10.1016/j.childyouth.2012.05.009

Slack, K. S., Kim, B., Yang, M., & Berger, L. M. (2014). The economic safety net for low-income families with children. *Children and Youth Services Review*, *46*, 213–219. http://doi.org/10.1016/j.childyouth.2014.08.008

Stanczyk, A. B. (2016). Paid family leave may reduce poverty following a birth: Evidence from California. Retrieved from https://ssascholars.uchicago.edu/sites/default/files/einet/files/stanczyk_einetbrief.pdf

Stearns, J. (2015). The effects of paid maternity leave: Evidence from Temporary Disability Insurance. *Journal of Health Economics*, *43,* 85-102.

Waldfogel, J. (2001). Family and medical leave: Evidence from the 2000 surveys. Retreived from http://www.bls.gov/opub/mlr/2001/09/art2full.pdf.

Ybarra, M. (2013). Implications of paid family leave for welfare participants. *Social Work Research, 37*(4), 375–387.

PAPER TWO.
THE EFFECTS OF MARKET ECONOMIES AND FAMILY POLICY ON THE GENDER EMPLOYMENT GAP

Introduction

Persistent cross-national variations in the gender employment gap exist despite the trend across many affluent countries demonstrating that women have increasingly participated in labor markets and have closed the gap in employment participation relative to male workers. Contrary to male workers, who often have relatively stable employment across their life course, when examined cross-nationally, women's employment situations are more heterogeneous than men's (Evers, Mooij, & Vuuren, 2008) and are more influenced by various life events such as childbirth or marriage (Blundell & McCurdy, 1999). A great deal of previous research has pointed to the importance of welfare state institutions and the role of family policies (Gornick & Meyers, 2008; Pettit & Hook, 2005; Korpi, Ferrarini, & Englund, 2013; Orloff, 2009; O'Connor, 1993; O'Connor, Orloff, & Shaver,1999; Mandel & Shalev, 2006) and labor market institutions (Blau & Kahn, 2003) as factors that influence female employment. In particular, studies have found that strong family policies enable mothers to deal with the dual responsibilities of work and childcare, thereby increasing female labor participation (Budig, Misra, & Bockmann, 2010; Mandel & Semyonov, 2005; Pettit & Hook, 2005).

Whereas the role of family policy in female employment is well established empirically, little is known about the role of the production regimes in shaping female employment. In regard to cross-national comparative research, the emerging Varieties of Capitalism (VoC) scholarship brings new insight into the potential influence of production regimes on the gender employment gap (Estevez-Abe, 2005; Tomlinson, 2007), specifically, how skill formation might produce gender occupational segregation (Estevez-Abe, 2005). In many countries, the production regime

sets the basic institutional arrangements for labor markets, and employment patterns are often contingent on the labor market conditions and market contexts (Pierson, 2001). Research on the contexts of cross-national market economies helps us advance our understanding of cross-national differences in the gender employment gap by disentangling the net effect of family policies and interactive role of production regime with family policy on gender employment gap.

This paper seeks to explain international variations in the gender gap in employment participation by integrating the two different comparative institutional frameworks of VoC and cross-national family policy literature that propose institutional systems relevant to female employment. This paper begins with the introduction of the VoC framework in order to understand the influence of market economies on the gender employment gap and then empirically tests the influence of VoC and family policy on the gender employment gap.

Literature Review

Influence of market economies on the gender employment gap

The VoC literature emphasizes the diversity of capitalist market economies and the way in which they lead states to respond differently to similar social and economic needs. Most broadly, VoC scholars contrast two types of market economies: liberal market economies (LMEs) with apparently limited state involvement in labor contracts and market regulation, and coordinated market economies (CMEs) in which the state plays a more explicit role in regulating and coordinating market arrangements to reflect agreements reached between employer and employee groups. These two production regimes are not only associated with different approaches to social protection (Hall & Soskice, 2001) but also gendered divisions of work and female labor participation (Estevez-Abe, 2005).

According to the VoC perspective, skill formation is the key to understanding female employment patterns (Estevez-Abe, 2005), as it has gender specific implications for female workers. Firm-specific skills, which are more prevalent in CMEs, are more likely to create gender discrimination mechanisms and occupational segregation than are general skills, which prevail in the LMEs (Estevez-Abe, 2005; Estevez-Abe, Iversen, & Soskice, 2001). Employers in the CMEs are more likely than those in LMEs to make a higher investment in workers' skill development because their market economies heavily depend on industries requiring accumulated specific skills. However, the nature of firm-specific skills poses more risks to both employers and employees than general skills do. Firm-specific skills are less portable in that they are not easily used in different settings within firms or industries. As a consequence, employers in CMEs are seen to benefit from strong social welfare policies that protect the general welfare of their workers and support them across periods of temporary unemployment or separation from the workplace. An absence of workers (even if it is temporary) could result in extra costs for recruitment and training of replaced workers. This situation puts female workers in unfavorable conditions (less attractive to employers) because female workers are likely to experience career breaks around childbirth or caring responsibilities, and these life experiences may create extra costs during their absence.

From the female workers' perspective, investment in firm-specific skills may be unfruitful. Female workers know that they may leave firms or the labor market during their life cycles around childbirth at a point before they reap the full returns of their investment in specific skills. Even after they return to the previous work, they may be in a disadvantaged position because they have to catch up with other male peer workers in developing firm-specific skills. Under these circumstances, a woman's rational choice in CMEs is to invest in general skills that

can be used in various industries and sectors even if it does not result in as large a salary as that for firm-specific skills. Gender inequalities in the CMEs are, thus, more pronounced in occupational sex-segregation than in the LMEs (Estevez-Abe, 2005).

Employers and employees in LMEs face different institutional assumptions from those in CMEs, mainly due to the different nature of skill formation in their market economies, which rely more on general skills. The responsibility of skill development for general skills is relegated to employees in LMEs. Whereas employers in CMEs invest highly in developing the employee's skills in areas that are applicable within a firm or an industry, employees in LMEs are likely to develop these skills on their own through available general education systems. Employees are also likely to be easily able to access or exit firms because LMEs are built upon a more rapid and fluid labor market and general skills that can be used in diverse firms across industries. This different structure imposes relatively less investment costs on employers in LMEs compared to those in CMEs. Female workers in LMEs are less likely than those in CMEs to experience barriers to enter or reenter the labor market after life events. This structure overall is associated with a lower gender occupational gap.

The core argument of the VoC literature about gender implications of production regimes can be extended to understanding the gender gap in employment participation. Following the VoC argument that firm-specific skills tend to create more gender discriminative mechanisms on employment by employers, I expect that CMEs are likely to be associated with a lower incidence of female employment, leading to a higher gender employment gap. On the other hand, general skills are likely to be associated with a smaller gender employment gap because they create relatively lower gender discriminative practices.

Hypothesis 1. A greater gender gap in employment participation is likely in countries that rely on higher firm-specific skills due to the gender discriminative incentives of firm-specific skills.

The effect of childcare and leave policies

The VoC framework has implications for understanding systematic institutional market contexts relevant to female employment. However, it is not sufficient to capture variations in female employment outcomes within similar market economies. Even though Nordic and Continental countries are both considered CMEs, they experience different levels of female employment rates as well as different patterns of female employment. The female employment rate is higher in Nordic countries than in Continental countries, whereas female employment interruptions or part-time employment rates are higher in Continental countries than in Nordic countries (Orloff, 2002).

These differences in female employment patterns raise the question of whether the VoC framework is sufficient to explain these patterns, and suggest that other institutional influences may play a role in shaping female employment by offsetting the employers' influences. The effects of childcare and family leave policies need to be examined in differing contexts. Among CMEs, the fact that Nordic countries with more generous family policies have more favorable female employment outcomes is in conflict with the expectation in the VoC framework that generous family policies presumably create more gender discriminative incentives for employers. According to the VoC framework, CMEs that have higher levels of female employment protections are likely to experience much stronger gender specific discrimination mechanisms than are found in LMEs (Estevez-Abe, 2005). Gender specific social protection, parental or maternity leave policies and childcare are expected to have negative implications on female employment because the costs of these social protections put burdens on employers. It is thus

necessary to integrate the influence of family policies and the role of market economies in considering cross-national gender employment gaps.

Childcare and leave related to maternity and childcare are two representatives of family policies. Economic theories have established explanations of how these two policies assist female workers to maintain their labor supply. Mothers are assumed to maximize their utilities over labor supply based on preferences and budgets and time constraints in regard to the presence of childcare and work decisions (Becker 1965; Connell, 1992). Mothers substitute maternal and non-maternal childcare until their wages are equal to the net benefit of maternal care. The costs of childcare are viewed as a reduction in female net wages such as a tax. If childcare is publically available, it reduces childcare costs and thus it is likely to increase labor supply.

Women's decisions about leave are based on the calculation of a reservation wage (Baker, Gruber, & Milligan, 2008; Klerman & Leibowitz, 1997, 2016). Each female worker compares her value of leisure (taking a family leave) with the offered wage. The marginal utility of leisure strictly decreases with the child's age as the child grows and the need for a mother's time and attention declines or alternative caregivers become affordable. On the contrary, the wage available stays constant throughout time or rises only with accumulated working experience that a female worker has had to abandon during leave. A female worker compares these two values, that is whether the value of staying home is greater than her market wage. Since her reservation wage is declining, at a certain point she will resume her work. This distribution of leave periods is optimally in equilibrium (Burgess, Gregg, Propper, & Washbrook, 2008). Providing a lengthy leave is particularly beneficial to mothers who would otherwise quit and later return to an alternative job with a lower wage if short leave or no leave is

available. A mandatory leave increases job continuity for such mothers (Klerman & Leibowitz, 1999).

Even though both family leave and childcare are associated with female employment, their underlying assumptions and potential influences on female employment may differ. Family leave and childcare have potentially varying assumptions around defamilizing/familizing. The intent of childcare is to commodify the labor of mothers with young children (Janus, 2012) by defamilizing the childcare. On the contrary, guaranteed time-off provided by leave in essence leads women to stay home and familize childcare. In empirical studies, whereas childcare displays a positive association with female employment, leave policies sometimes resulted in conflicting findings. Even though leave policy in general is associated with greater female employment, extensive leave is found to have a negative impact on female employment (Budig, Misra, & Boeckmann, 2012; Petit & Hook 2005). It may induce women to stay home with their children, losing their skills while taking leave and thus leading some of them to drop out of the labor market. Mandatory leave policies also provide more incentives to employers to discriminate against female workers than providing childcare does because of extra costs for replacement workers or for training them upon return to work (Estevze-Abe, 2005). Employers share the tax burden for leave replacement benefits whereas the responsibility of childcare either falls upon individuals (for example, the U.S. system of private childcare) or on the public (countries with a public childcare system). Thus, even though leave policies are known to be an important female employment support, the nature of the effects of leave policies on female employment may differ from those for childcare.

Empirically the positive aspects of childcare on female employment have been extensively documented by previous studies. Childcare is critical for enabling female workers to

return to the labor market (Gornick & Meyers, 2008; Pettit & Hook, 2009). Childcare increases the female labor supply because childcare arrangements help female workers devote their time to career development so that they can maintain their competency (Budig et al., 2012; Petit & Hook, 2005), and it produces fewer motherhood penalties (Budig et al., 2012; Schober, 2014). The introduction of universal childcare in Canada brought a sizable increase in childcare use and female employment for two-parent families (Baker et al., 2008). Studies have found a positive association between childcare and full-time employment (Baker et al., 2008; Connelly & Kimmel, 2003) and that higher childcare costs to the family increase the probability of not being employed and lower the probability of being employed full-time if employed at all (Baker et al., 2008; Connelly & Kimmel, 2003). Implementation of universal childcare increases numbers of women working more than 30 but less than 40 hours per week in Canada (Baker et al., 2008). I hypothesize, based on previous literature, that childcare is negatively associated with the gender employment gap because it increases female employment participation.

Hypothesis 2. Public childcare is associated with a lower gender gap in employment participation because it allows flexibility for women to take on the dual responsibilities of work and family, leading to higher female employment participation.

The effects of parental leave on employment participation may be more complex. The availability and length of job-protected leave have been empirically found to increase women's labor force attachment and career progress after childbirth by guaranteeing job security during their leave time (Gornick & Meyers, 2008; Kluve & Tamm, 2013; Pettit & Hook, 2005). It is, however, possible that extensively long parental leave may induce many female workers to exit the labor market by creating time-off during which they lose opportunities to build their skills or by putting more burdens on hiring and maintaining female employment for employers. Extensive

maternal/parental leave has a negative impact on female employment (Petit & Hook, 2005). Based on the previous literature, I expect that the effect of labor market exits caused by leave generosity may not be linear, but instead that leave length decreases the gender employment gap up to a certain point and then increases it thereafter. Thus I hypothesize that leave impact on the gender employment gap is curvilinear.

Hypothesis 3. Leave policy is associated with a lower gender gap in employment participation because leave generosity positively influences labor attachment for female workers.
Hypothesis 3-1. Leave generosity has a curvilinear relation with the gender employment gap that parental leave decreases the gender employment gap up to a certain point and then extensively long parental leave increases the gender employment gap.

The varying effects of childcare and leave policies by market economy regime

Social policies have varying effects across countries by different institutional contexts and political configurations (Frege & Godard, 2014; Pierson, 2001; Rueda & Pontusson, 2000), but it is largely unknown and unexplored whether and how different market economies contextualize and influence the gender employment gap. In the following, I hypothesize that general organizational and institutional features in LMEs and CMEs may moderate the gender employment gap.

According to the VoC framework, CMEs with higher levels of female employment protections are likely to experience much stronger gender specific discrimination mechanisms than LMEs (Estevez-Abe, 2005). Relatively high gender-specific social protection, parental or maternity leave policies, and childcare in CMEs are expected to have more negative implications on female employment because of the costs of these social protections placed on employers.

Due to different assumptions, there is a more negative effect of leave generosity than childcare on female employment in the CMEs (Estevez-Abe, 2005), so I expect that leave policies have more negative effects on female labor participation through skill specificity in the CMEs, i.e., a strong reliance on firm-specific skills, by accumulating greater gender-specific disadvantages than in the LMEs. There may be adverse effects of guaranteed time-off provided by family leave in terms of the loss of human capital, essentially creating a greater gender employment gap. Strong reliance on firm-specific skills in the CMEs may exacerbate this impact because leave generosity can work as a mechanism that strengthens employers' discrimination against female workers and thus increases gender occupation segregation.

Hypothesis 4. Childcare is associated with a higher gender employment gap in coordinated market economies than in liberal market economies.

Hypothesis 5. Leave generosity is associated with higher gender employment gap in coordinated market economies than in liberal market economies.

Methods

Data

I combine individual-level data and country-level data for accounting for individual employment with country-level institutions. Individual-level data comes from the Luxembourg Income Study (LIS), which presents cross-nationally harmonized and nationally representative individual-level datasets. For country-level indicators, several datasets will be combined to capture country-level variations: Comparative Welfare State dataset (Brady, Huber, & Stephens, 2014), Organisation for Economic Co-operation and Development (OECD) Social Expenditure,

Comparative Family Policy Database (Gauthier, 2011), OECD Employment outlook (1993; 1996), and Government at a glance 2011 (OECD, 2014).

Fifteen OECD countries—Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, the Netherlands, Norway, Spain, Sweden, the United Kingdom, and the United States—are studied here for gender differences in employment participation for any type of job.

Adults between the ages of 25 and 45 are selected for analysis of the gender employment gap in order to identify the working age population whose labor market behaviors are likely to be most affected by work and family reconciliation policies and market economies. This yields a sample size of 311,525 persons in 15 countries in the study. Sample sizes for each country are presented in Table 2.1.

Table 2.1.

Origins of Individual Level Data and Sample Sizes

Country	Year	Full LIS sample (original)	Sample (25,45)	Original Data Source
Australia	2010	42,595	19,093	Household Expenditure Survey (HES) and Survey of Income and Housing
Austria	2004	13,043	6,489	Survey on Income and Living Conditions EU-SILC 2005 Survey
Belgium	2000	6,935	6,738	Panel Study of Belgian Household (PSBH)/ BE ECHP
Denmark	2010	180,266	84,767	Statistics Denmark
Finland	2010	23,018	10,263	Survey on Income and Living Conditions (SILC)
France	2010	41,285	18,566	Family Budget Survey (BDF)
Germany	2010	26,952	11,591	German Social Economic Panel Study (GSOEP)
Greece	2010	15,067	6,776	Survey on Income and Living Condition / EU-SILC
Ireland	2010	11,005	4,765	Survey on Income and Living Condition / EU-SILC
Netherlands	2010	25,461	11,700	Survey on Income and Living Condition / EU-SILC
Norway	2010	489,750	239,090	Household Income Statistics
Spain	2010	34,756	17,167	Survey on Income and Living Condition / EU-SILC
Sweden	2005	36,918	11,470	Income Distribution Survey (HINK)
United Kingdom	2010	57,928	25,959	Family Expenditure Survey (FES)
United States	2010	204,983	99,550	Current Population Survey (CPS)

Analytic model

I used a random intercept multilevel logistic model in estimating employment outcome. Multilevel analysis (Boeckmann, Misra, & Budig, 2013; Pettit & Hook, 2005; Raduenbush & Bryk, 2002) is suitable for taking into account the violation of the OLS assumption of independency of the residuals, especially for the nested data structure in this study that individuals reside in a country. It allows one to examine the country-level variables as well as individual characteristics. Specifically, the model is expressed as follows:

$$\log\left(\frac{p_{emp_{ij}}}{1-p_{empij}}\right)$$

$$= \beta_{0j} + \beta_1 X_{1ij} + \beta_2(Family\ policy_{ij}\ or\ Skill_{ij})$$

$$+ \beta_3 Gender_{ij} \times (Family\ policy_{ij}\ or\ Skill_{ij}) + R_{ij}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}$$

The dependent variable is the log-odds of employment for individual *i* in country *j*. β_{0j} is the average log-odd of employment across countries in addition to group deviation by each country, U_{0j}. X_{1ij} and the associated coefficient β_1 is the vector of individual-level variables. X_{1ij} includes individual characteristics such as age, education level, the presence of young children, marital status, and transfer income of a household. Marital status and the presence of young children are further examined to determine whether they have gendered effects. Z_{1ij} is country-level variables, such as market economies presented as skill profile, and work and family reconciliation policy, such as leave generosity and public childcare. $\beta_2(Family\ policy_{ij}\ or\ Skill_{ij})$ detects the main effect of variables of interests (country-level). $\beta_3 Gender_{ij} \times (Family\ policy_{ij}\ or\ Skill_{ij})$ are the vectors of interaction between gender and country-level independent variable, gendered effect of work and family reconciliation policies

and market economies. This analysis gauges the degrees to which institutions such as leave policies, childcare, and market economies (skill profile) have differential effects by gender.

Furthermore, I assume that skill profiles and family policies are moderator variables that jointly influence the logistic regression of the employment outcome; especially, skill profiles may influence the strength of effects of family policies on employment.

$$\log\left(\frac{p_{emp_{ij}}}{1-p_{empij}}\right)$$

$$= \beta_{0j} + \beta_1 X_{1ij} + \beta_2 Family\ policy_{ij} + \beta_3 Skill_{ij} + \beta_4 Gender_{ij} \times Skill_{ij}$$

$$+ \beta_5 Gender_{ij} \times Family\ policy_{ij} + \beta_6 Skill_{ij} \times Family\ policy_{ij}$$

$$+ \beta_7 Gender_{ij} \times Skill_{ij} \times Family\ policy_{ij} + R_{ij}$$

$$\beta_{0j} = \gamma_{00} + U_{0j}$$

In order to examine varying effects of family policies by market economies on the gender employment gap, this model includes a three-way interaction of $\beta_7 Gender_{ij} \times Skill_{ij} \times Family\ policy_{ij}$, which is the vector of interaction between gender and country-level family policy, and skill profiles. This analysis gauges the degrees to which gender employment probabilities vary by different levels of leave generosity in different levels of skill profile.

Variables

Employment

Employment outcome is measured as any employment activity in the specific year of LIS data. Following the definition of employment by the International Labor Organization (ILO), paid work during the reference period is considered employed.

Skill profiles

Skill profiles capture what types of skill each country strongly relies on and, thus, is linked to the types of market economies. No country with only specific skills or general skills exists, but countries tend to organize their economies with a focus on either firm-specific skills or general skills for institutional complementarities for economic advantages; firm-specific skills are related to CMEs, whereas general skills are more prevalent in LMEs (Hall & Soskice, 2001).

National skill profile is measured with the mean of the intensity of vocational training and employer tenure, following Iversen and Rosenbluth (2006). A higher skill profile score indicates more firm-specific skill formation, whereas a lower score indicates a more general skill level. In other words, a higher score means that a country is likely to rely on firm-specific skills rather than general skills.

Intensity of vocational training represents to what extent the education system in each country corresponds to skill formation. Vocational training is associated with higher skill profiles due to its relevance to job training in specific industries or firms. This is measured with the share of an age cohort that has attained either secondary or post-secondary (ISCED5B) vocational training (Iversen & Rosenbluth, 2006).

Another indicator, firm tenure, is measured by the distribution of employer tenure (OECD, 1997; 1993).[1] This provides a broad summary of patterns in job stability. In many CMEs, both workers and employers want to reap the long-term benefits of specific skill investments, and because workers with firm-specific skills are less likely to move around due to more rigid labor and market structures, firm tenure rates tend to be longer for workers with

[1] Source: Iversen & Rosenbluth (2006). OECD *Employment Outlook*, 1997, Table 5.5. For Norway: *OECD Employment Outlook*, 1993, Table 4.1.

highly specific skills. Table 2.2 summarizes unit interpretation and expected impacts of skill specificity and its measurement.

Childcare

I used childcare expenditures to measure state commitment to childcare. Childcare expenditures (percentage of GDP) are adjusted by population of children under age 3 (percentage of the total population). Childcare expenditure rather than enrollment in public childcare facilities is more useful to gauge state efforts relating to childcare. This is because the enrollment could also be interpreted as policy outcome combined with individuals' decisions rather than policy efforts, and numbers of children in publicly funded daycare facilities are endogenous with female employment. I expect that higher state commitment to childcare is likely to increase female employment and reduce gender differences in employment.

Leave generosity

Leave generosity is measured with the total length of maternity, parental, and childcare leave using Gauthier's Comparative Family Policy Database. Job protective parental leave after the birth of a child enhances women's labor participation. In order to account for the curvilinear relation, squared leave length is also added to the analysis.

Interpretation and expected impacts of skill profiles, childcare, and leave generosity and measurements of them are summarized in Table 2.2.

Table 2.2.
Interpretation, Expected impacts, and Measurements of Variables of Interest

Variable	Unit interpretation	Female employment	Employment Gap	Measurement	Source
Skill profile	Higher score of country-level skill profile indicates that a country is likely to rely on firm-specific skills rather than general skills, thus suggesting more coordinated market economies	Negative	Increase	Employer tenure + vocational training from educational attainment of 25- to 64-year-old workers; Normalized from 0 to 1	OECD Employment outlook (1993; 1996) Iversen & Rosenbluth (2006)
Childcare	Higher score indicates greater state efforts to provide childcare.	Positive	Decrease	Public childcare expenditure (% of GDP)/ Child population (% of population aged 0-3)	OECD Social Expenditure Database 2013, Public expenditure on childcare and pre-school
Leave generosity	Higher leave generosity indicates longer family leave weeks.	Positive to a certain point and turn to negative	Decrease to a certain point but increase later (curvilinear)	Total leave length of maternity, parental, and childcare leave (weeks)	Gauthier, A.H. (2011). Comparative Family Policy Database, Version 3 [computer file]. Netherlands Interdisciplinary Demographic Institute and Max Planck Institute for Demographic Research (distributors). Retrieved from: www.demogr.mpg.de

Country-level variables

Several country-level factors are also controlled. First, an indicator of the size of the public sector in employment is included as a proxy for the volume of public services provided by the state and the relative magnitude of the welfare state as an employer (Iversen & Rosenbluth, 2006; Mandel & Shalev, 2006). An interactive effect of women's labor force participation and public sector delivery is found particularly in social democratic welfare states (Huber & Stephens, 2000). The size of the public sector is measured with the percentage of the total work force employed in the public social service sector (OECD, 2011).

Second, female employment is affected by tax policy, in particular, how the system sets taxation policy around couples' joint taxation. Setting high taxes on a second earner in a household has a negative impact on female employment. Given that most female workers are not the primary earner in a household, this could reduce the marginal utility of women's work (Jaumotte, 2003). I used the ratio of tax rates for a second earner who earned 67% of the average production worker's wages given to the single earner (Jaumottes, 2003).

Third, country-level unemployment rates may influence employment participation for men and women differently. Women, more than men, tend to be less skilled or to be employed in part-time work or irregular jobs, and unskilled workers or low-wage workers are likely to be adversely affected by unemployment because they are more readily substitutable than are skilled, high-paid workers.

Finally, I also included Gross Domestic Product (GDP) as a country-level control variable. Measurements of all country-level factors and their data sources are presented in Table 2.3.

Table 2.3.
Sources and Measurement of Country-level Control Variables

Variables	Measurement	Source
Centralization in wage bargaining	Combination of union authority and union concentration. It is originally derived from Iversen's centralization index in "Wage Bargaining, Central Bank Independence and the Real Effects of Money". *International Organization*, 52, summer 1998.	Brady, Huber, & Stephens (2014). Comparative Welfare State data
Public service sector	Percentage of the total work force employed in the public social service sector	Government at a glance 2011(OECD, 2011)
Gross domestic product (GDP)	Gross domestic product (GDP) at market prices is the expenditure on final goods and services minus imports: final consumption expenditures, gross capital formation, and exports less imports. This indicator is measured in USD per capita (GDP per capita) and in million USD at current prices and PPPs.	OECD (2016), Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en (Accessed on 26 October 2016)
Tax ratio for second earner	Ratio of tax rates for second earner given single earner, women earned 67% of average production workers earnings. The husband is assumed to earn 100% of APW and the couple is assumed to have two children. This tax rate is compared with the average tax rate for a single individual with the same gross earnings as the second earner.	Jaumottes, F. (2003). Labour Force Participation of Women: Empirical Evidence on The Role of Policy and Other Determinants in OECD Countries. OECD Working Paper No. 37.
Unemployment rate	Unemployment rate is the number of unemployed people as a percentage of the labor force. Unemployed people are those who report that they are without work, that they are available for work and that they have taken active steps to find work in the last four weeks.	OECD (2016), Unemployment rate (indicator). doi: 10.1787/997c8750-en (Accessed on 26 October 2016)

Individual and household variables

Several individual and household characteristics are included in the main models following standard labor supply models as well as human capital theory (Boeckmann, Misra, & Budig, 2013; Budig & England, 2001; Lundberg, 2012; Blau & Kahn, 2001). These frameworks are useful in explaining factors that influence female employment decisions. Standard labor supply theory considers that family circumstances can be determinants of female labor supply. For example, other sources of family income from a spouse or other members may decrease the likelihood of female employment. To account for these factors, the amount of transfer income and income from other household members are included as logarithmically transformed forms.

Childbearing and childcare also influence female decisions on employment based on a calculation of reservation wage or utility of employment over staying home. Marital status and the presence of children under age 5 are included as potentially influential variables in female employment decisions due to their potential gendered effects. I also included the interaction between gender and marital status and the interaction between gender and the existence of children under age 5 in the model. For example, marital status is likely to be positively associated with productivity for men but may not be for women and the existence of young children under age 5 would be negatively associated with women more than with men.

According to human capital theory, educational attainment is another important determinant of female employment decisions. Because of their greater opportunities for stable well-paid employment, highly educated mothers are less likely to leave the labor market than low-educated mothers are (Becker, 1991). The model includes individual human capital represented as age and education level (Becker, 1965; Klerman & Leibowitz, 1997). Age can be understood as a proxy for job experience. Education is measured with dummy variables

following the LIS definition. That is, low education is defined as less than secondary education completed, medium education is defined as secondary education completed (ISCED level 3 or 4), and high education is defined as tertiary (i.e., postsecondary) education completed (ISCED level 5 or 6) in the dataset.

Summary statistics of variables of interest (country-level) and individual variables in each country are presented in the Table 2.4.

Table 2.4.
Individual Variables and Country-level Variables by Countries (2009)

Country	Age (Mean, SD)	Married (%)	Education attainment (%, Distribution)			Child (%)	Transfer income (mean, SD)	Other income (mean, SD)	Skill profile	Leave length (weeks)	Adjusted childcare expenditure
			L	M	H						
Australia	35.4 (7.0)	70.0	26.0	36.7	37.3	45.4	4.98 (4.44)	7.10 (4.93)	-1.66	52	9.1
Austria	35.9 (5.8)	65.9	14.3	64.7	21.0	35.0	6.68 (3.8)	6.40 (4.87)	.14	120	10.6
Belgium	36.0 (5.7)	68.5	21.1	34.8	44.1	31.7	6.43 (3.44)	6.40 (4.52)	1.77	93	12.0
Denmark	35.7 (6.0)	48.1	18.5	44.1	37.5	35.4	8.41 (1.60)	7.05 (4.83)	-.30	50	32.4
Finland	35.9 (6.1)	56.3	10.6	44.7	44.7	35.9	7.21 (3.39)	6.80 (4.71)	.84	213	19.6
France	35.7 (6.0)	41.5	30.3	38.2	31.5	40.7	7.56 (3.06)	6.47 (4.71)	.69	172	19.5
Germany	36.1 (6.2)	50.4	10.5	57.4	32.1	27.7	6.26 (4.00)	5.95 (5.07)	1.88	170	12.0
Greece	35.6 (6.0)	59.7	23.4	48.2	28.4	24.9	4.96 (4.49)	4.67 (4.98)	.19	67	2.0
Ireland	35.5 (5.7)	56.0	19.2	29.0	51.8	30.8	8.06 (3.05)	5.93 (5.12)	.44	54	6.6
Netherlands	36.5 (5.9)	59.3	18.9	43.4	38.0	22.1	6.40 (3.57)	6.96 (4.90)	.46	68	16.2
Norway	35.4 (6.0)	41.6	18.5	39.9	34.9	23.2	7.49 (3.50)	6.88 (4.91)	.61	160	19.1
Spain	35.9 (6.0)	62.0	41.2	22.0	36.8	26.5	4.67 (4.50)	6.12 (4.87)	-.45	172	11.2

Table 2.4. Cont.

Sweden	35.5 (5.9)	43.1	10.2	57.1	36.2	23.6	7.19 (3.59)	5.96 (4.81)	.98	146	27.0
United Kingdom	35.7 (6.0)	52.7	11.5	57.2	35.0	23.7	5.91 (4.11)	6.34 (5.01)	-.81	65	17.7
United States	35.3 (6.0)	61.2	11.0	45.0	34.4	23.5	5.56 (1.78)	5.51 (3.88)	-1.34	12	6.1

Education attainment L: low-education level completed; M: medium-education level completed; H: high-education level completed; Other income: income from other household members; Child expenditures are adjusted by the size of children under age 3 in each country.

Results

Patterns of the gender employment gap across countries

I will begin here by introducing patterns of the gender employment gap across countries and then turn to an interpretation of the results of multi-level logistic regression on employment. Figure 2.1.1 illustrates the weighted employment participation by gender in 15 OECD countries ranked by female employment rate. Employment participation is calculated by number of people reported to be employed divided by the entire study population. The shaded bar shows male employment rate and the bright grey bar shows female employment rate. Male employment rate is highest in Belgium (95.6%) followed by Austria (92.3%) and the Netherlands (90.7%) and lowest in Ireland (68.8%). Female employment rate is highest in Belgium (79.2%) and lowest in Greece (57.2%). Female employment rate in Germany is interesting because it is higher than those in Nordic countries (Sweden, Norway, and Finland); this finding contrasts with previous research findings indicating that continental welfare states tend to have lower levels of female employment than Nordic countries have (Orloff, 2002).

The ranking of gender employment gap across countries does not map onto that of the female employment rate. Gender differences in employment participation in Figure 2.1.2 vary from 2.6 percentage points in Denmark to 17.4 percentage points in Austria. This is interesting because female employment rate in Austria ranks in the middle among countries. The gender employment gap tends to be lower in Nordic countries (Denmark, Finland, and Norway), but this trend is not restricted to those countries; in some cases, such as the continental welfare states Germany and Ireland, and the United Kingdom, a liberal welfare state, the level of gender employment gap is lower than in Norway and Sweden.

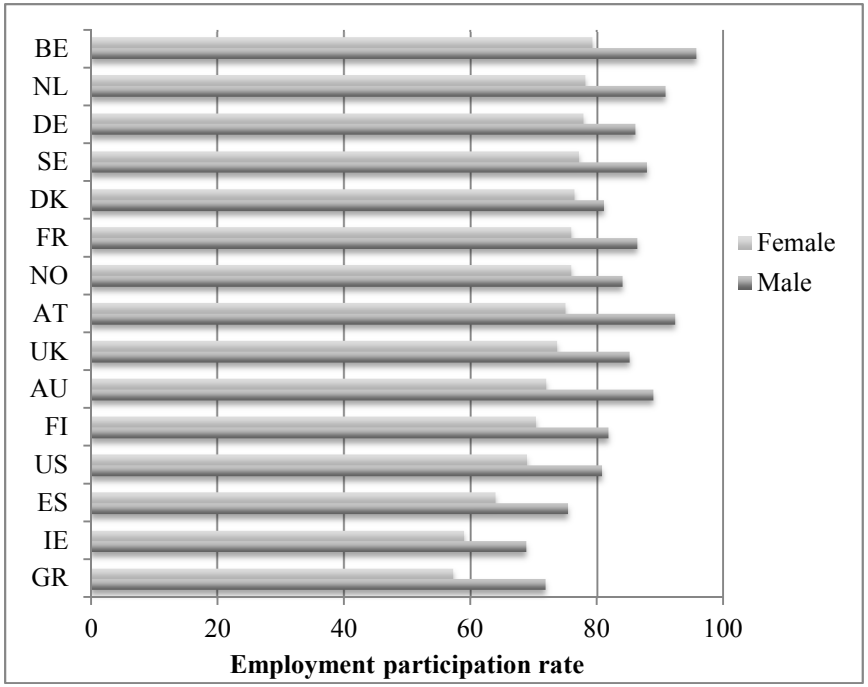


Figure 2.1.1. Ranked employment participation by gender and countries

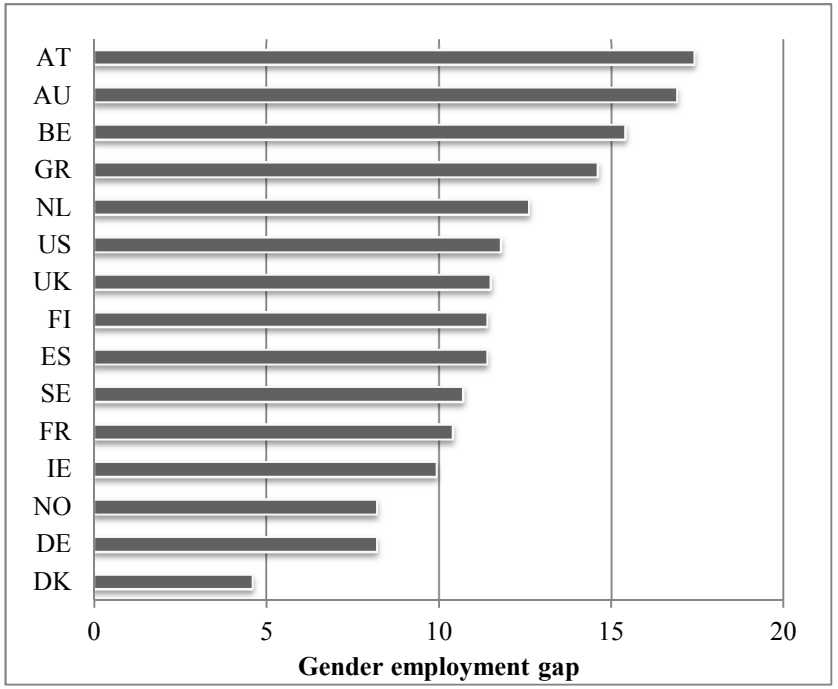


Figure 2.1.2. Ranked gender employment gap by countries

Figure 2.1. Weighted Male Employment, Female Employment, and Gender Gap in Employment Participation in 15 countries

AT: Austria; AU: Australia; BE: Belgium: CA: Canada; DE: Germany; DK: Denmark; ES: Spain; FI: Finland; FR: France; GR: Greece; IE: Ireland; NL: Netherlands; NO: Norway; SE: Sweden; UK: United Kingdom; US: United States.
Employment participation (%) = employed aged 25–45/ total population aged 25–45

Gender employment gap controlling for individual and household characteristics

Table 2.5 presents the results of a random intercept multilevel logistic regression analysis with only individual and household characteristics. It contains simulated probabilities of employment for hypothetical individuals of male and female separately. It also presents gender differences in employment probabilities by using different levels of values in individual and household characteristic variables, such as educational attainment, marital status, age, and the presence of young child. I found it necessary to calculate gender difference by different levels of values in variables because probabilities are not on a linear scale as opposed to log odds, and thus, the change in probability depends on the values chosen for the other predictors. The amount of transfer income or income from other household members are log transformed and set at means in the logistic regression (coefficients for this individual and household model are presented in Appendix 2.1).

Age is negatively associated with the gender employment gap. For 25-year-old, low-educated, married persons, the gender employment gap is 17.83 percentage points, whereas for 45-year-old, low-educated married persons, the gender employment gap is 14.54 percentage points. For those who completed the medium-level education, age impact on reducing the gender employment gap is greater than that for those with low-level or high-level education attainment. The difference in employment probabilities between 25-year-old married women with medium-level education and men with the same demographic characteristics is 14.47 percentage points, but the difference in gender employment probabilities goes down to 9.09 percentage points for 45 year olds with the same characteristics. Overall, higher education attainment is associated with a higher employment rate for both women and men and is negatively associated with the gender employment gap.

It is interesting to note that for both men and women, unmarried persons are less likely than married persons to be employed, but that does not mean that there is a greater gender employment gap among unmarried persons. In fact, the effects of marital status vary by other characteristics. For example, both those with medium- and low- level education, unmarried status is associated with higher gender employment gap whereas for those with high-level education, unmarried persons are likely to have a lower gender employment gap than married persons. The gender employment gap for a hypothetical person 35 years old and married with high-level education is 9.36 percentage points, whereas for an unmarried person with the same demographic characteristics, it is 8.10 percentage points.

Table 2.5.
Simulated Gender Employment Gap Probabilities for Hypothetical Persons: Individual Model by Varying Individual and Household Characteristics

	Male (%)	Female (%)	Gender gap (percentage points)
25 years old, low-level education, married	64.40	46.56	17.83
25 years old, low-level education, unmarried	62.43	44.41	18.01
35 years old, low-level education, married	72.98	56.31	16.67
45 years old, low-level education, married	80.24	65.70	14.54
25 years old, medium-level education, married	80.71	66.23	14.47
35 years old, medium-level education, married	86.36	74.56	11.80
45 years old, medium-level education, married	90.61	81.52	9.09
25 years old, medium-level education, unmarried	79.57	64.68	14.90
25 years old, high-level education, married	85.66	73.59	12.07
25 years old, high-level education, unmarried	84.66	72.04	12.59
35 years old, high-level education, married	90.09	80.74	9.36
35 years old, high-level education, unmarried	89.35	79.49	8.10
45 years old, high-level education, married	93.29	86.39	6.91
45 years old, high-level education, unmarried	92.77	85.42	7.33
25 years old, medium-level education, unmarried, young child	78.06	62.60	13.97
25 years old, low-level education, unmarried, no young child	66.03	48.34	17.69
35 years old, high-level education, married, young child	91.43	83.03	8.41
35 years old, high-level education, unmarried, no young child	90.78	81.89	8.89
35 years old, high-level education, married, young child	91.43	83.03	8.40
35 years old, high-level education, married, no young child	89.25	79.30	9.95

Note: Education attainment categories follow LIS parameters. Low-education: never attended, no completed education, or education completed at the ISCED level 0, 1, or 2; medium-education: secondary education (completed ISCED level 3 or 4); high-education: postsecondary education (completed ISCED level 5 or 6). Other variables that are not specified such as transfer income or income from other household members are set at their means.

Gender difference in predicted employment probabilities

Figure 2.2 shows the findings from the multilevel regression model that predicts how institutional contexts may shape the gender employment gap. I tested the effects of variables of interest for employment (skill profile, leave length, and daycare) concurrently in this model, in order to detect the net effect of these variables, accounting for individual and household characteristics and potential impacts from country-level covariates of family policy and skill

profile. The figure illustrates how family policy and market economies influence the size of the gender gap in employment probabilities. In order to provide an easier interpretation of binary employment outcomes with interaction terms, I determined predicted gender differences in probabilities of employment across the range of some predictors of interest (skill profile, leave length, and daycare), setting all other variables at means across all the groups from the multilevel logistic regression models.

This figure shows the marginal effects (y-axis) across the observed range of values of the country-level measures (x-axis), and the upper and lower bounds of the confidence intervals (dashed lines). Differences in predicted employment probabilities between men and women are significant if the confidence intervals do not include zero (shown as a red line in the figures) at the observed value of the predictors. Coefficients for the model are presented in Appendix 2.1.

The findings indicate that an increase of specific skill profiles in a country is associated with a decreasing gender employment gap, suggesting that CMEs may be favorable to female employment. This finding contrasts with hypothesis 1, which states that strong reliance on specific skills for each country (more CMEs) would harm female employment relative to male employment and thus increase the gender employment gap. Childcare provision decreases the gender gap probability of being employed, suggesting a positive impact on female employment (Figure 2.2). This finding not only supports the hypothesis 2, but is also aligned with previous research findings indicating that childcare has a positive influence on female employment. Finally, leave generosity decreases the gender gap in employment participation, but extensively long leave, longer than 210 weeks of parental or childcare leave, does not produce further significant decline in the gender employment gap (Figure 2.2).

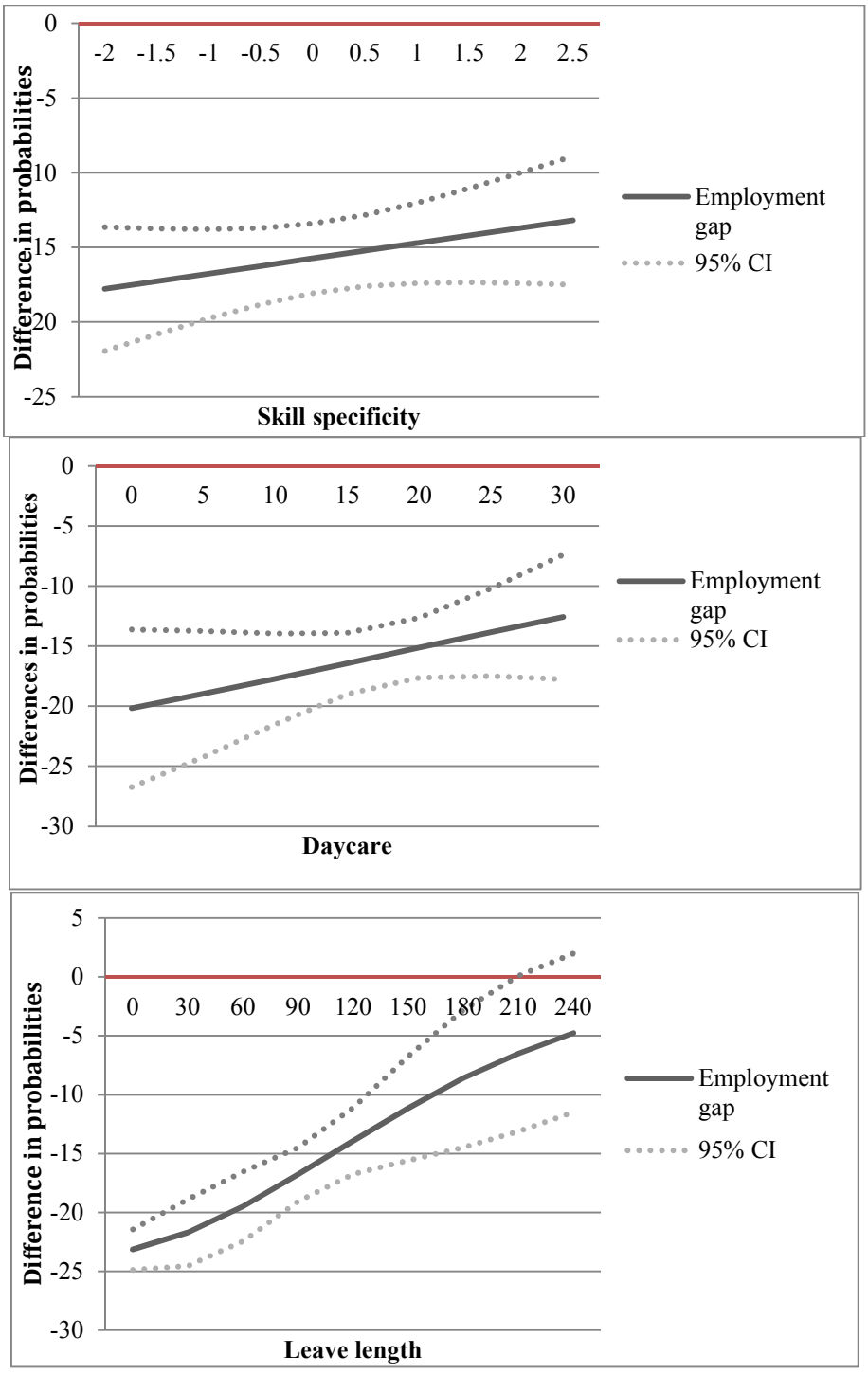


Figure 2.2. The Effects of Institutional Contexts on the Gender Employment Gap

Note: This model includes individual and household characteristics (age, young child presence in a household, education attainment, transfer income, income from household members), variables of interests (skill profile, childcare, and leave generosity) and country-level control variables (GDP, tax ratio for second earners, and size of service sector). The upper and lower bounds of the confidence intervals are presented as dashed lines.

Varying effects of parental leave generosity and daycare by market economy

Figure 2.3 illustrates whether parental leave generosity has varying effects on the gender employment gap by different levels of skill profile with a model with three-way interaction between skill profile, leave generosity, and gender. It presents the gender employment gap in predicted probabilities and its confidential interval when skill profiles are held constant at different combinations of highest (2) and lowest (-2) values. These two values present two cases of highly coordinated market economy versus less coordinated market economy.

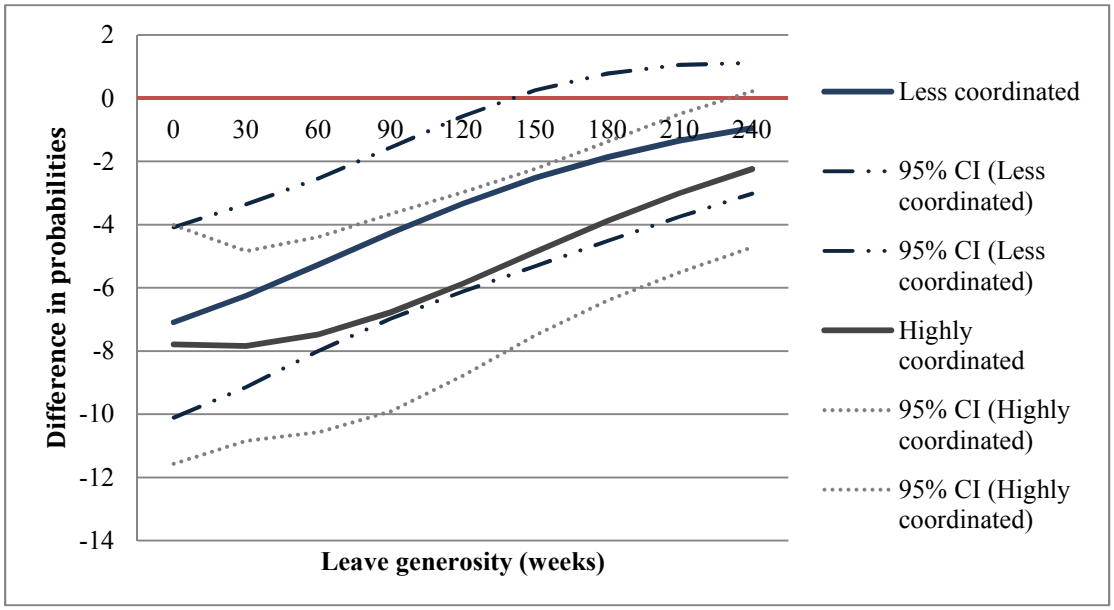


Figure 2.3. The Effect of Leave Generosity Moderated by Skill Profile

Note: This model includes individual and household characteristics (age, the presence of young child in a household, education attainment, transfer income, income from household members), three-way interaction between skill profile, leave generosity, and sex, and country-level control variables (GDP, tax ratio for second earners, and size of service sector).

For any cases, leave generosity is negatively associated with the gender employment gap to a certain point for both market economy types—for highly coordinated market economies, up to 210 weeks, and for liberal market economies, up to 150 weeks. The gender employment gap is larger in coordinated market economies than in less coordinated market economies across all levels of leave generosity. Whereas in the previous model examining independent effects of skill

profile, leave generosity, and childcare finds that leave generosity and skill profile are both negatively associated with the gender employment gap independently (Figure 2.2), this moderating model finds that differences in the gender wage gap between coordinated market economies and liberal market economies increase up to 150 weeks as leave length increases (Figure 2.3). In other words, in coordinated market economies leave generosity is likely to be associated with the gender employment gap relative to liberal market economies. This finding supports my hypothesis that leave generosity is associated with a greater gender employment gap in higher coordinated market economies.

However, I do not find significant moderating effects of skill profile and daycare on the gender employment gap. The difference in probabilities in the gender employment gap between coordinated market economies and liberal market economies is persistent and constant across all levels of daycare expenditure. With no interactive association between skill profile and daycare, the gender employment gap is always higher in liberal market economy countries.

Robustness test

I conduct robustness analyses to see whether the findings with regard to the relationship between family policies, market economies, and the gender employment gap hold, taking other contexts into account. My findings show that the direction of the effects on the gap of predicted probabilities of employment is largely unaffected by a larger population of ages 25 to 55. I also test whether the effects of each variable of interest hold valid and robust if each variable is entered separately with no country-level control variables. All models show that the relationships between gender employment gaps and family policies and skill profiles are robust.

Discussion

The present study integrates family policy literature and the VoC framework and investigates whether and in what way institutional contexts influence the gender employment gap. Findings show that gender gaps in employment participation are unlikely to be adequately explained by individual-level differences only, and that institutional conditions of family policy and market economies are crucial for understanding these patterns.

First, I found that childcare and parental leave generosity significantly decrease the gender employment gap after accounting for the effects of market economies. Publically supported childcare and leave entitlement related to family issues are likely to reduce the gender employment gap by strengthening women's continued attachment to employment. Furthermore, longer than 210 weeks of parental leave does not have significant impact on decreasing the gender employment gap, suggesting that the extensively long leave policies are likely mechanisms that mediate female labor market participation with human capital depreciation. These findings about the net effect of childcare and parental leave mean that the influence of market economies does not hinder the unique and significant influence of childcare and parental leave generosity on the gender employment gap.

Second, market economies have substantial impact on female employment, but the direction of the influence of market economies on the gender employment gap is more complex than theoretical expectations from VoC literature. Whereas theoretically, more coordinated market economy countries with higher levels of firm-specific skills are expected to impede female employment by imposing more costs for employers on hiring female workers, the empirical examination reveals that, in fact, the country-level skill profile is associated with a smaller gender gap in probabilities for employment participation. However, in the moderator

model, the gender employment gap is larger in a coordinated market economy than in a liberal market economy, given the same level of leave generosity. Coordinated market economies amplify the effect of leave generosity in increasing the gender employment gap, suggesting that leave generosity is more negatively associated with female employment in a coordinated market economy.

The finding that firm-specific skill is associated with less gender employment gap suggests that it does not mean that an emphasis on firm-specific skill formation in CMEs itself produces gender bias in employment (Estevez-Abe, 2005). However, the interactive role of firm-specific skill on the effect of leave generosity on the higher gender employment gap implies that CMEs can be more gender biased than LMEs in terms of their interaction with family policy, in particular, leave generosity. Despite critiques of VoC literature for overlooking the role of the state and its role in influencing employers' decisions or their investment in employees, particularly in the coordinated market economies (Rubery, 2009), this finding demonstrates the theoretical assumption that employers are the main actors investing in employees and influencing market economies.

On the contrary, no interactive effect was found in childcare. This may be because the effect of childcare by market economy is more complex. Even though VoC literature assumes that in CMEs, childcare exerts negative effects on female employment due to employers' hesitance with regard to female hiring, it is possible that childcare has a more positive role in female employment and reduces the gender employment gap in the CMEs. Because CMEs depend heavily on industries requiring accumulated firm-specific skills, the role and significance of childcare can be amplified in preventing female workers from falling behind in the

advancement of their skills by allowing them to maintain their labor status and human capital development.

The present study has implications for the current literature, which has few empirical studies examining the role of market economies on female employment. First, bringing market economies into the current literature on the gender employment gap enriches our understanding of cross-national differences in female employment by highlighting the role of institutions, especially the moderating effect by market economy. Second, the finding also contributes to our understanding of the effects of family policies by accounting for influence of market economy.

References

Baker, M., Gruber, J., Milligan, K., Journal, S., August, N., & Baker, M. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, *116*(4), 709–745.

Becker, G. S. (1965). A theory of the allocation of time. *Economic Journal*, *75*, 493–517.

Blau, F. D., & Kahn, L. M. (2003). Understanding international differences in the gender pay gap. *Journal of Labour Economics*, *21*(1), 106–144.

Blundell, R., & MaCurdy, T. E. (1999). Labor supply: A review of alternative approaches. In O. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics*, Vol. 3 (pp. 1559–1696). Amsterdam: Elsevier Science.

Boeckman, I., Misra, J., & Budig, M. (2015). Cultural and institutioanl factors shaping mother employment and working hours in postindustrial countries. *Social Forces, 93*(4), 1301-1333.

Raduenbush, A., & Bryk, S. W. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks: Sage Publications.

Brady, D., Huber, E., & Stephens, J.D. (2014). Comparative welfare states data set, University of North Carolina and WZB Berlin Social Science Center.

Budig, M. J., & England, P. (2001). The wage penalty for motherhood. *American Sociological Review*, *66*(2), 204–225. http://doi.org/10.2307/2657415

Budig, M. J., Misra, J., & Boeckmann, I. (2012). The motherhood penalty in cross-national perspective : The importance of work-family policies and cultural attitudes. *Social Politics, 19*(2), 163-193.

Burgess, S., Gregg, P., Propper, C., & Washbrook, E. (2008). Maternity rights and mothers' return to work. *Labour Economics*, *15*(2), 168–201. doi:10.1016/j.labeco.2005.05.010

Connelly, R. (1992). The effect of child care costs on married women's labour force particiaption. *Review of Economics and Statistics*, *74*(1), 83–90.

Connelly, R., & Kimmel, J. (2003). Marital status and full – time / part – time work status in child care choices. *Applied Economics*, *35*(7), 761–777. http://doi.org/10.1080/0003684022000020841

Esping-Andersen, G. (2009). *The incomplete revolution: Adapting to women's new roles*. Cambridge, United Kingdom: The Polity Press.

Estevez-Abe, M. (2005). Gender bias in skills and social policies: The varieties of capitalism perspective on sex segregation. *Social Politics*, *12*(2), 180–215. http://doi.org/10.1093/sp/jxi011

Estevez-Abe, M., Iversen, T, & Soskice, D. (2001). Social protection and the formation of skills: A reinterpretation of welfare state. In P. Hall & D. Soskice (Eds.), *Varieties of Capitalism* (pp. 145–183). New York: Oxford University Press.

Evers, M., Mooij, R. D., & Vuuren, D. V. (2008). The wage elasticity of labour supply: A synthesis of empricial estimates. *De Economist*, *156*, 25–43.

Gauthier, A. H. (2002). Family policies in industrialized countries: Is there convergence? *Population (English Edition)*, *57*(3), 447–474. http://doi.org/10.3917/pope.203.0447

Gauthier, A. H. (2011). Comparative family policy database, Version 3 [computer file]. Netherlands Interdisciplinary Demographic Institute and Max Planck Institute for Demographic Research (distributors). Retrieved from: www.demogr.mpg.de

Gislason, I. V., & Eydal, G. B. (2011). *Parental leave, childcare and gender equality in the Nordic countries.* Nordic Council of Ministers. Retrieved from http://ffdd.ru/activity/attach/information/182/parental_leave_childcare_and_gender_equality_in_the_nordic_countries.pdf

Gornick, J. C., & Meyers, M. K. (2008). Creating gender egalitarian societies: An agenda for reform. *Politics & Society*, *36*(3), 313–349. http://doi.org/10.1177/0032329208320562

Hakim, C. (2006). Women, careers, and work-life preferences. *British Journal of Guidance & Counselling*, *34*(3), 279–294. http://doi.org/10.1080/03069880600769118

Hall, P., & Soskice, D. (2001). An introduction to varieties of capitalism. In P. Hall & D. Soskice (Eds.), *Varieties of Capitalism* (pp.1–68). Oxford, United Kingdom and New York, NY: Oxford University Press.

Huber, E., & Stephens, J. D. (2000). Partisan governance, women's employment, and the social democratic service state. *American Sociological Review*, *65*(3), 323–42.

Iversen, T., & Rosenbluth, F. (2006). The political economy of gender: Explaining cross-national variation in the gender division of labor and the gender voting gap. *American Journal of Political Science*, *50*(1), 1–19. http://doi.org/10.1111/j.1540-5907.2006.00166.x

Janus, A. L. (2012). The gap between mothers' work-family orientations and employment trajectories in 18 OECD countries. *European Sociological Review, 29*(4)*,* 752–766.

Jaumottes, F. (2003). *Labour force participation of women: Empirical evidence on the role of policy and other determinants in OECD countries* (OECD Working Paper No. 37) http://www.oecd-ilibrary.org/economics/labour-force-participation-of-women_eco_studies-v2003-art9-en

Kang, J. Y., & Meyers, M. K. (forthcoming). Family policy changes across welfare and production regime, 1990 to 2010. In G. B. Eydal & T. Rostgaard (Eds.). *Handbook of Child and Family Policy*. Cheltenham, United Kingdom: Edward Elgar Publishing.

Klerman, J., & Leibowitz, A. (1997). Labor supply effects of state maternity leave legislation. In F. D. Balu & R. G. Ehrenberg (Eds.), *Gender and Family Issues in the Workplace* (pp. 65–

91). New York, NY: Russell Sage Foundation.

Klerman, J., & Leibowitz, A. (2016). Job Continuity among new mothers, *Demography*, *26*(2), 145–155.

Kluve, J., & Tamm, M. (2013). Parental leave regulations, mothers' labor force attachment and fathers' childcare involvement: evidence from a natural experiment. *Journal of Population Economics*, *26*(3), 983–1005. http://doi.org/10.1007/s00148-012-0404-1

Korpi, W., Ferrarini, T., & Englund, S. (2013). Women's opportunities under different family policy constellations: Gender, class, and inequality tradeoffs in western countries re-examined. *Social Politics*, *20*(1), 1–40. http://doi.org/10.1093/sp/jxs028

Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from Canada. *Journal of Labor Economics*, *26*(3), 519–548.

Lundberg, I. (2012). *Gender-differentiated effects of parenthood on earnings: understanding Cross-National Variation in the Motherhood Penalty and Fatherhood Bonus* (LIS Working paper No. 576). Luxembourg: Luxembourg Income Study.

Mandel, H., & Shalev, M. (2006). A welfare state paradox: State interventions and women's employment opportunities in 22 countries. *American Journal of Sociology*, *111*, 1910–49.

Mandel, H., & Shalev, M. (2009). Gender, class, and varieties of capitalism. *Social Politics*, *16*(2), 161–181. http://doi.org/10.1093/sp/jxp006

Mukhopadhyay, S. (2012). The effects of the 1978 Pregnancy Discrimination Act on female labor supply. *International Economic Review*, *53*(4), 1133–1153. http://doi.org/10.1111/j.1468-2354.2012.00714.x

Miller, C. F. (1993). Part-time participation over the life cycle among married women who work in the market. *Applied Economics, 25,* 91–99.

O'Connor, J. S. (1993). Gender, class and citizenship in the analysis of welfare state regimes : comparative issues theoretical and methodological issues. *The British Journal of Sociology*, *44*(3), 501–518.

O'Connor, J. S., Orloff, A. S., & Shaver, S. (1999). *States, markets, families: Gender, liberalism, and social policy in Australia, Canada, Great Britain, and the United States*. Cambridge, United Kingdom; New York, NY: Cambridge University Press.

OECD (2016), Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en (Accessed on 26 October 2016)

OECD (2016), Unemployment rate (indicator). doi: 10.1787/997c8750-en (Accessed on 26 October 2016)

O'Reilly, J. (2006). Framing comparisons: gendering perspectives on cross-national comparative research on work and welfare. *Work Employment and Society, 20*(4)*,* 731–750.

Orloff, A. S. (2002). *Women's employment and welfare regimes* (Social Policy and Development Programme Paper 12). Switzerland : United Nations Research Institute for Social Development.

Orloff, A. S. (2009). Gendering the comparative analysis of welfare states: An unfinished agenda. *Sociological Theory*, *27*(3), 317–343.

Perry, S. (1988). Downward occupatioanl mobility and part-time women workers. *Applied Economics*, *20*, 485–495.

Pierson, P. (2001). Investigating the welfare state at century's end. In P. Pierson (Ed.), *The New Politics of the Welfare State* (pp. 1–14), Oxford, United Kingdom and New York, NY: Oxford University Press.

Pettit, B., & Hook, J. (2005). The structure of women's employment in comparative perspective. *Social Forces*, *84*(2), 779–801. http://doi.org/10.1353/sof.2006.0029

Powell, L. M. (1998). Part-time versus full-time work and child care costs: evidence for married mothers. *Applied Economics*, *30*(4)*,* 503–511.

Ray, R., Gornick, J. C., & Schmitt, J. (2010). Who cares? assessing generosity and gender equality in parental leave policy designs in 21 countries. *Journal of European Social Policy*, *20*(3), 196–216. http://doi.org/10.1177/0958928710364434

Rossin-Slater, M., Ruhm, C. J., & Waldfogel, J. (2013). The Effects of California's Paid Family Leave Program on Mothers' Leave-Taking and Subsequent Labor Market Outcomes. *Journal of Policy Analysis and Management*, *32*(2), 224–245. http://doi.org/10.1002/pam.21676

Rubery, J. (2009). How gendering the varieties of capitalism requires a wider lens. *Social Politics, 16*(2), 192-203.

Thevenon, O. (2011). Family Policies in OECD Countries: A Comparative Analysis. *Population and Development Review*, *37*(1), 57–87. http://doi.org/10.1111/j.1728-4457.2011.00390.x

Tomlinson, J. (2007). Employment regulation, welfare and gender regimes : a co.mparative analysis of women's working-time patterns and work – life balance in the U.K. and the U.S. *The International Journal of Human Resource Management, 18*(3), 401–415. http://doi.org/10.1080/09585190601167466

Webb, J. (2009). Gender and occupation in market economies: Change and restructuring since the 1980s. *Social Politics*, *16*(1), 82–110. http://doi.org/10.1093/sp/jxp003

PAPER THREE.
VARIETIES OF CAPITALISMS (VOC) AND THE GENDER WAGE GAP— HOW VOC MEDIATES THE EFFECTS OF CHILDCARE, LEAVE GENEROSITY AND CASH EXPENDITURE

Introduction

Over recent decades the expansion of family policies across developed countries has resulted in unexpected consequences. The association between family policy and the gender wage gap may not be straightforward; in fact is sometimes quite complex. Although previous research findings have indicated that family policy is associated with favorable female employment outcomes, recent studies have revealed challenges in understanding the effects of family policies on the gender wage gap. Access to the top wage percentile is less available in Nordic countries with generous family policy than in liberal welfare states (Mandel & Shalev, 2009). Extensive female-exclusive social rights lead to discrimination by employers (Tomaskovic-Devey & Skaggs, 1999), including hesitance in hiring women (Estevez-Abe, 2005). The female-to-male wage ratio in the Nordic countries has been stagnant, in contrast to the United States, where the gender wage gap has sharply decreased (Datta Gupta, Smith, & Verner, 2009). Public service sector jobs have been a driving force to encourage female employment in these Nordic countries, but they have also perpetuated gender inequality by transferring the gender division in the private sphere into the public sphere (O'Connor, 1993). In particular, family-friendly jobs in the public sector create a higher gender wage gap, especially for highly educated women (Mandel, 2012; Mandel & Semyonov, 2005).

Some researchers argue that the higher gender wage gap in developed welfare states may in fact reflect cross-national differences in labor market structures, such as different arrangements of occupations, rather than be a result of generous family policy (Korpi, Ferrarini,

& Englund, 2013). Others have not found significant differences in different types of welfare states (between Sweden and Germany for example) in the gender wage gap among highly skilled employees (Grönlund & Magnusson, 2016) or only very small differences in the chances of entering the top earnings quintile, after accounting for socio-economic selectivity in women's probabilities to join the labor force and different labor market structures around managerial positions (Korpi et al., 2013).

Growing attention has been paid to the importance of institutional contexts across countries in understanding the gender wage gap; however, research to date has not paid sufficient attention to examining the potential moderating role of institutional contexts on the influence of family policy on the gender wage gap. I argue that the unexpected consequences of generous family policy on the gender wage gap may result from the varying effects of family policy meditated by institutional contexts of production regimes and welfare regimes. Since the effects of other social policies differ across countries with different market arrangements and political configurations (Frege & Godard, 2014; Pierson, 2001; Rueda & Pontusson, 2000), in addressing the association between family policy and the gender wage gap, highlighting the different institutional arrangements of each country would be useful. In particular, I bring the insights of varieties of capitalism (VoC), highlighting the importance of production regimes in the cross-national female employment studies, and integrate these insights with considerations of comparative welfare states. The integration of VoC and welfare state regime approaches provides a useful framework for understanding the institutional context for family policy and female employment in the advanced democracies. Given that women's decisions to work can be contingent on labor market conditions, an understanding of institutional contexts allows for a

more nuanced interpretation of labor markets and female employment variations in different countries.

This paper begins with building a framework drawing from VoC and welfare regime scholarship. This combined approach enriches the current debate on the gender wage gap and seeks to identify varying mediating effects of family policy by different political economies, that is by market and welfare regimes. The empirical part of this paper examines whether specific family policies influence the gender wage gap depending on different markets and welfare regimes. The discussion of the implications of market/welfare regime on the gender wage gap follows.

Literature Review

Integration of welfare regime and varieties of capitalism

VoC highlights the importance of employers (corporations) as actors shaping national market economies (Hall & Soskice, 2001) as opposed to the power of the working class and leftist governments' maneuvering of political resources, which is the emphasis stressed by welfare regime literature (Esping-Andersen, 1990; Korpi, 2006). Despite different underlying institutional assumptions, research results have increasingly suggested complementarity between the welfare regime and VoC approaches in explaining social policy variations (Estevez-Abe, 2005; Iversen, 2005; Iversen & Stephens, 2008), with several studies identifying identical clusters of countries (Esping-Andersen, 1990; Hall & Soskice, 2001; Huber & Stephens, 2001; Iversen & Stephens, 2008; Rueda & Pontusson, 2000; Schroeder, 2009). This is not very surprising because market economies in fact are based on the interrelation among various institutional spheres, such as industrial relations institutions, financial arrangements, systems of

vocational education and training, corporate governance, and, moreover, social protection systems (Hall & Soskice, 2001).

Table 3.1 illustrates clusters of countries at the intersections of the three welfare state types described in the welfare regime literature (Esping-Andersen, 1990) and two market economies designated in the VoC literature (Hall & Soskice, 2001). By subdividing the category of the coordinated market economies (CMEs) into two clusters based on welfare regime, three different clusters are identified: CMEs/continental welfare states, CMEs/social democratic welfare states, and liberal market economies (LMEs)/welfare states (Kang & Meyers, in press; Thelen, 2012).[2] Two clusters, CMEs/continental welfare states and CMEs/social democratic welfare states, have distinctive features based on the degree of corporatism, wage setting institutions (Thelen, 2012), political coalition structures (Iversen & Soskice, 2006), mode of coordination (Martin & Thelen, 2007), and family policy characteristics (Kang & Meyers, in press).

Table 3.1.
Integrated Typology of Welfare States and Market Economies for Family Policy

Welfare state typologies / Market economies	Liberal welfare states	Continental European welfare states	Social democratic welfare states
Liberal market economies (LME)	Australia U.K., U.S., and New Zealand	–	–
Coordinated market economies (CME)	–**	Austria, Belgium, France, * and Germany	Denmark, Finland, Norway, and Sweden

Source: Esping-Andersen (1990), The three worlds of welfare capitalism; Hall & Soskice (2001), Varieties of Capitalism; Iversen & Stephen (2008), Partisan politics, the welfare state, and three worlds of

[2] Even though previous studies have agreed that they can be integrated, how to name them varies by researcher. Here, I follow Kang and Meyers (in press) in order to highlight the integration between welfare regime and VoC.

human capital formation; Schroder (2009), Integrating welfare and production typologies: How refinements of Varieties of Capitalism approach call for a combination of welfare typologies; Rueda & Pontusson (2000), Wage inequality and varieties of capitalism.

Note: * France is categorized as a mixed economy in Rueda & Pontusson (2000).

**Japan and Switzerland are categorized either liberal welfare states or coordinated market economies. Japan and Switzerland are excluded in the study because their economy and welfare states are not complementary, which may have more noise in expecting the moderating role of institutional contexts on family policy effects.

Market economies/welfare contexts and family policy schemes

Integration of welfare regime and VoC literature provides a useful framework for understanding the institutional contexts for family policy in the advanced democracies. This can be used to show how market economies and the state have interacted to produce distinctive social welfare policy approaches (Ebbinghaus & Manow, 2001; Huber & Stephens, 2001), in particular, family policy (Kang & Meyers, in press). Production regime and redistributive institutions interact to establish and reinforce the political and economic feasibility of various social policy approaches and, in turn, these social protection systems form the context for family policies. Subspheres of institutions in political economies, for example market economies and work and family reconciliation policy, can be mutually complementary and reinforce a certain path of change (Ebbinghaus & Manow, 2001; Huber & Stephens, 2001). Indeed, increasing women's labor force participation has generated demands for a greater public role in caregiving, thus creating pressure for an expansion of welfare state services in social democratic welfare states (Huber & Stephens, 2000). The following discussion explores how different family policy schemes may have arisen as a result of the interaction between market economies and redistributive institutional contexts (welfare states) for each cluster.

Liberal market economies/liberal welfare states

Countries characterized by liberal capitalism exhibit the residual approach to government intervention (Esping-Andersen, 1990) and general skill specificity (Hall & Soskice, 2001; Estevez-Abe, 2006). These two institutional contexts have interactively influenced the development of the least generous family policies among advanced liberal capitalists countries. Female workers in LMEs are likely than those in CMEs to face favorable situations in investing in skill profile in their career development due to relatively gender-neutral and portable general skills (Estevez-Abe, 2005), leading to a lesser demand for social protection (Hall & Soskice, 2001; Iversen & Soskice, 2001), in particular, family benefits.

This situation can, however, be detrimental to female workers whose class position leaves them with a lack of social protection. The LMEs abandon class equality among female workers by placing a burden on economically disadvantaged female workers (Mandel, 2009). Highly educated and skilled female workers may benefit from the easy exit/entry job system based on general skill profile with the use of private resources and benefits, including company-provided maternity leave and childcare. Publicly provided family policies are likely to be less important to them than to low-income female workers, who lack private resources. Low-income and low-skilled female workers may want protections, in particular, childcare or maternity leave, but may lack the political power or resources to advance their demands. This exacerbates inequality under the condition of weak labor institutions and left party power. The lack of generous family policy schemes can be perpetuated and reinforced by a weak left party or weak unions in these countries. In fact, along with insubstantial labor power, the structures of market economies may easily dismantle and fragment the collective power of female workers. These class differences weaken collective political demands and make it very hard to mobilize for improvement in

public family policies, eventually leading to the least generous family policies among the countries examined here.

Coordinated market economies

Female workers in the CMEs face different institutional contexts than do those in LMEs due to the fact that the CMEs rest on a firm-specific skill profile. The nature of firm-specific skills poses greater risks for both employers and employees than general skills do, creating a collaborative agreement and action between employers and employees for building family benefits (Estevez-Abe, 2005; Soskice, 2005).

Coordinated market economies/continental welfare states.

Countries in these two capitalisms present greater governmental efforts for family benefits than exist in LMEs; however one difference between continental welfare states and democratic welfare states lies in approach to female employment and caregiving responsibility in their family policies. CMEs/continental economies encourage women's caregiving responsibility rather than promote female employment by compensating female job interruption based on life experiences such as childbirth, as is common in the CMEs/social democratic states. That is, family policies in the coordinated continental countries rest on the institutional assumption that female workers will exit the labor market after marriage and childbirth.

Industry- or sector-based coordination in the countries of the CMEs/continental welfare regime is worth examining in order to comprehend this difference. Sector-based coordination determines contexts of other institutions, such as social protections as well as labor institutions of wage settings, and further exerts power to shape different social policies from CMEs/social democratic welfare states. Sector-based social policy produces industry-based, fragmented social protection that results in a dismantling of equality (Esping-Andersen, 1990). Wage-setting

agreements negotiated at the industry or sector level can also produce wider pay gaps and more segmented labor markets than those in social democratic welfare states. These social programs and labor institutions operate as mechanisms of stratification based on class, but also between gender when it interacts with the overall institutional contexts of favoring and protecting insiders of the labor market, mostly male workers (Iversen, 2005; Rueda, 2005). Industry-specific coordination structures channel female workers into part-time employment and into the relatively less lucrative service sectors with weak and segmented union power (Morgan, 2005; Rubery, 2009; Visser, 2006) and eventually create barriers to entry for female workers. Family policies in the CMEs/continental countries reflect the interaction between these market arrangements and decentralized social protection and how overall institutional coordination is related to family policy.

Coordinated market economies/social democratic welfare states.

Family policy in CMEs/social democratic welfare states is designed for the dual earner model (Gornick & Meyers, 2008) that promotes female employment by compensating for career interruptions of female workers by providing strong job protection for female workers around their career breaks and social programs of childcare and leave policy. Their active investment in public childcare for, in particular, children under age three is well known to be a crucial contribution to female career development (Gornick & Meyers, 2008).

Generous family benefits in these countries reflect the fact that firm-specific skill formation is likely to lead to higher social protection through demand from both female workers and employers (Estevez-Abe, 2005; Hall & Soskice, 2001). Nonetheless, integration of welfare regime and market economies is essential to the uniqueness of family policy in these countries as distinguished from those in European continental countries. The difference in family policy

schemes between continental and social democratic welfare states may result from how the overall political economy integrates the demand for higher social protection from both employers and female workers with regard to various institutional contexts (Kang & Meyers, in press). The national corporatism, along with state power (Martin & Thelen, 2007), coordination strategy (Thelen, 2012), strong labor protection, and political coalition (Iversen & Soskice, 2006) in CMEs/social democratic welfare states produces egalitarian social protection. It further advantages female workers in mobilizing their demands for family policy politically by promoting solidity and the power of the working class, likely to give more political leverage in creating a cycle for more generous family benefits (Huber & Stephens, 2000).

The moderating role of market economies and welfare regimes on family policy effects

Institutional contexts of redistributive mechanism, welfare states (Mandel & Semyonov, 2006), or production regime, i.e., market economies (Estevez-Abe, 2005; Tomlinson, 2007), influence female employment patterns across countries (Evertsson, Grunow, & Aisenbrey, 2015; Grönlund & Magnusson, 2016). In the following discussion, I hypothesize how different market and welfare regimes moderate the role and influence of family policy. I begin with a discussion of the expected effects of relevant labor market institutions and factors on gender wage gaps that vary across LMEs and CMEs. I then turn to the variables of interest for this current study, specific family policies such as parental leave, childcare, and family cash expenditure that are expected to influence gender wage gaps, considering both their direct effects on gender wage gaps through women's labor market participation and likely interactions with institutional contexts of political economy.

Institutions contributing to the gender wage gap in market economy/welfare regime

General organizational features in LMEs and CMEs may be associated with differences in the gender wage gap. Research has identified specific mechanisms that contribute to widening or narrowing the wage gap for the overall population in different market systems (Rueda & Pontusson, 2000), and this can be useful to infer the impacts of features of the organization of market economies on the gender wage gap. As these are not the main explanatory variables and they are considered as controlling factors in the study, I introduce a general prediction of the impact of the effects of each factor in three market economy/welfare regime types with exceptions for several cases for which I expect a specific direction by market economy/welfare regime.

Centralization of wage coordination

I expect that the centralization of wage coordination is associated with a lower gender wage gap, aligning with the significance of bargaining on overall wage inequality (Rueda & Pontusson, 2000) and the gender wage gap (Blau & Kahn, 2003). Wage bargaining produces egalitarian outcomes through a political mechanism by which centralization alters "the influence of different groups in the wage-setting process" (Rueda & Pontusson, 2000, p. 360), as well as an ideological mechanism whereby centralization affects norms of fairness (Rueda & Pontusson, 2000). Further, I expect that its magnitude of reduction in the gender wage gap is greatest in the CMEs/social democratic welfare regime. In their research, Rueda and Pontusson (2000) found that bargaining centralization is negatively associated with a wage gap only in social market economies; its impacts in liberal market or mixed economies was not statistically significant. This is because the significance and the effect of collective bargaining on wage-distributive

outcomes are enhanced by the institutional arrangements of this market economy/welfare regime through high reservation wages and extensive bargaining coverage (Rueda & Pontusson, 2000).

Union density

The effect of union density on the wage gap may not be straightforward (Rueda & Pontusson, 2000). On the one hand, union density compresses the distribution of wages in the union sector of an economy, favoring redistribution of wages; on the other hand, unionism can augment the wage inequality contingent on the distribution of union membership across the wage hierarchy. Unionized workers earn more than equivalent nonunionized workers, and this wage differential may increase wage inequality depending on the coverage of union membership, for example, if highly paid wage earners were better organized than low-paid workers.

Furthermore, the union density effect on the gender wage gap by different market economies and welfare regimes can be complex. I postulate that it may be positively associated with the gender wage gap in particular in CMEs/continental welfare regimes and in LMEs/welfare regimes. Unions exert power exclusively for insiders of the labor market (Rueda, 2005), and insiders of the labor market may be predominantly male workers. Female workers are more likely to be in part-time or irregular jobs that labor unions might not extensively aim to protect. In the LMEs/welfare regime, the relatively narrow coverage of unions may result in incremental wage differential between union members and non-union members, disadvantaging female workers disproportionately.

Unemployment rate

I expect that the unemployment rate is positively associated with gender wage inequality. Low-wage workers are likely to be adversely affected by unemployment because they are more readily substitutable than are skilled, high-paid workers, and women, more than men, tend to be

less skilled or to be employed in part-time work or irregular jobs. However, it is also possible that unemployment is associated with less wage inequality if employers are more likely to lay off unskilled workers than highly skilled workers during economic downturns.

Government partisanship

It is not straightforward in what way government partisanship impacts the gender wage gap but it is known that it affects the overall wage gap directly and indirectly: it influences the distribution of market income and influences the wage gap via redistributive policies (Rueda & Pontusson, 2000). Another study also found the interactive effect of women's labor force participation and social democratic governance on public delivery of welfare state services (Huber & Stephens, 2000).

Female labor-force participation

The gender-wage-distributive effects of female labor-force participation are contradictory. As women acquire skills through labor force participation, higher rates of female labor-force participation should be associated with a smaller skill gap between men and women, leading to a lower gender wage gap. On the contrary, the female labor supply has a positive effect on the gender wage gap (Blau & Kahn, 2003) for gender occupation segregation (Estevez-Abe, 2005) or concentration in sectors (O'Connor, 1993) or jobs with flexible work conditions, which leads female workers to be highly underrepresented in lucrative and powerful managerial positions. I now turn to the variables of primary theoretical interest.

Effects of family policy by market economies and welfare regimes

Childcare

Childcare is critical for female workers to maintain their employment status during the period of child-rearing (Gornick & Meyers, 2008; Pettit & Hook, 2009). In particular, public

childcare supports weaken the depressing effect of child-rearing on female wages and thus reduce the gender wage gap by allowing female workers to maintain their competitiveness with male workers.

The effect of childcare in reducing the gender wage gap may be more profound in the CMEs due to the firm-specific skills. The CMEs heavily depend on industries requiring accumulated firm-specific skills. Firm-specific skills are less portable than the general skills prevalent in LMEs because they are not easily used in different settings of firms or industries. An absence of workers (even if it is temporary) could result in extra costs for recruiting and training replacement workers. This situation makes female workers less attractive to employers because they are likely to experience career breaks around childbirth or caring responsibilities. This situation can amplify the role and significance of in preventing female workers from falling behind in the advancement of their skills by allowing them to maintain their labor status and human capital development.

In contrast, in the LMEs, mothers who exit the labor market for childbirth or childbearing may not experience severe difficulties in reentering the labor market relative to those in CMEs. This uncoordinated, fluid structure places them in a relatively advantageous position compared to those in the CMEs because they can apply their general skills to a wider range of industries or firms. Childcare still matters to help female workers maintain their employment status, leading to a less pronounced gender wage gap, but this effect may be smaller in LMEs than in CMEs.

Maternal/parental leave generosity

Providing adequate maternal/parental leave is likely to reduce the gender wage gap by decreasing labor market dropout (Charles et al., 2001; Pettit & Hook, 2005) and consequent reductions in human capital acquisition necessary for wage progression. Some studies have

found, however, that extensive maternal/parental leave has a negative impact on female employment (Petit & Hook, 2005) leading to a higher motherhood penalty (Boeckmann, Misra, & Budig, 2016). This suggests that maternal/parental leave generosity decreases the gender wage gap to a certain threshold of length of leave but may increase the gender wage gap after that point. Nonetheless, the implications of extensive leave on the gender wage gap are less straightforward if it disproportionately leads less-skilled female workers to drop out of the labor market with only a few committed female workers consistently in the labor market.

With respect to the CMEs, I expect leave generosity to be positively associated with gender wage gap. It is possible that leave policies have more negative effects on female labor participation through skill specificity in the CMEs (both CMEs/continental welfare regimes and CMEs/social democratic welfare regimes), i.e., strong reliance on firm-specific skills, by accumulating greater gender-specific disadvantages than in the LMEs. Providing a mandatory leave is particularly beneficial to mothers who would otherwise quit and later return to an alternative job with a lower wage if short leave or no leave is available.

At the same time, the amount of leave time available affects women's opportunities to develop and accumulate their skillsets. There may be adverse effects of guaranteed time-off provided by family leave in terms of the loss of human capital, essentially creating a greater gender wage gap. Strong reliance on firm-specific skills in the CMEs may exacerbate this impact because leave generosity can work as a mechanism that strengths employers' discrimination against female workers and thus increases gender occupation segregation. As opposed to more fluid market systems in the LMEs, hiring and replacing workers places higher risks on employers in the CMEs. This eventually confines female workers to female-concentrated jobs (Estevez-Abe, 2006) that pay less, which leads to a greater gender wage gap.

This positive association between leave generosity and the gender wage gap can be more salient in CMEs/continental welfare states than in CMEs/social democratic welfare states. Different institutional structures and political coalitions, such as higher female political mobilization and egalitarian social welfare policies, are likely to mitigate the impact of leave on increasing the gender wage gap.

Conversely, I expect that leave generosity is negatively associated with the gender wage gap in LMEs, but to a lesser degree than in CMEs. Leave policies are likely to reduce the gender wage gap by preventing female employees from losing their human capital. This effect may be greater in a context with fewer state efforts for labor and social protection. At the same time, the potential erosion in human capital development caused by leave-taking is less likely to be detrimental in LMEs than in CMEs due to its reliance on general skill profiles.

Family cash expenditures

I expect that family cash expenditures reduce the gender wage gap by providing wage compensation to female workers in LMEs/liberal welfare states and CMEs/social democratic welfare states. In particular, cash expenditures in LMEs/liberal welfare states can have a more positive impact on female employment, narrowing the gender wage gap. Fewer policy efforts in the areas of wage structure and labor market inequalities (Iversen, 2005) may augment the role of family cash expenditures on the gender wage gap. In fact, tax credits and income-based cash benefits have been effective policy tools for reducing wage inequality and encouraging female employment, especially for middle-income families and low-income families respectively (Iversen, 2005).

However, the effect of family cash expenditures on the gender wage gap may have an opposite effect in the CMEs/continental welfare states. Family cash expenditures in the

CMEs/continental welfare states could decrease female labor force participation and further increase the gender wage gap. Family cash benefits can prevent many female workers from returning to the labor market after childbirth or provide an incentive for them to stay home (Nieuwenhuis et al., 2012). In particular, in the situation in which institutional arrangements assumes "dualization" (Thelen, 2013, p. 146) and "selective and shielded deregulations" (Iversen, 2005, p. 257) for female employment in CMEs/continental welfare states, female workers are more likely to be concentrated in lower-paid jobs, resulting in a greater gender wage gap than in CMEs/social democratic welfare states and LMEs/liberal welfare states.

Table 3.2.
Summary of Expected Associations with the Gender Wage Gap by Market Economy/Welfare Regimes (Accounting for Interactions)

	LMEs/Liberal welfare states	CMEs/continental welfare states	CMEs/social democratic welfare states
Childcare	$-/0$	$--$	$-$
Leave	$+$	$++$	$+$
Cash	$-$	$+$	$0/+$

Method

Data

Data from 13 Organization for Economic Co-operation and Development (OECD) countries—Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, New Zealand, Norway, Sweden, the U.K., and the U.S.—are examined in the analysis. Typology of three distinctive market economies/welfare states are shown in Table 3.1. The dataset is unbalanced because it has missing information on the gender wage gap. For example, during the study period, one country has only 10 observations (Austria) whereas another country (Australia) has full information for the 28-year period. The observations also vary by market

economies/welfare regimes. Whereas Nordic countries have a relatively long observation period, that for the CMEs/continental welfare regime countries is shorter. The unit of the analysis is "country-years" of dependent and independent variables, and the total sample size for this analysis is 223.

I use the national level gender wage gap indicator from the OECD (2016). The gender wage gap is defined as the difference between median earnings of men and women for full-time employees and those who are self-employed. The gender wage gap is presented as a percentage of male median wage.

Leave generosity is measured with the total length of all leave, such as maternity leave, parental leave, and childcare leave, from the Comparative Family Policy Database (Gauthier, 2011). Daycare generosity is measured by public expenditure on daycare or home-help services under family policy as a percentage of GDP (Gauthier, 2011). I use cash expenditure of family benefits, that is public spending on family benefits, including financial support that is exclusively for families and children in percentage of GDP. Child-related cash transfers (cash benefits) to families with children include child allowances, public income support payments during periods of parental leave, and income support for single-parent families or financial support for families provided through the tax system, such as tax exemptions (e.g., income from child benefits that is not included in the tax base), child tax allowances (amounts for children that are deducted from gross income and are not included in taxable income), and child tax credits (amounts that are deducted from the tax liability). Childcare expenditures, parental leave weeks and family allowance for each county over the study period are presented in Appendix 3.1.

Additionally, several country-level indicators that might affect the gender wage gap are included in the model. First, I use the indicator of centralization of wage bargaining from the

Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention, and Social Pacts (ICTWSS) (Visser, 2016). Values of this indicator range from 1 to 5.75 in the original data. Second, I use the union density indicator from ICTWSS data (Visser, 2016). Union density is defined as net union membership as a proportion of wage earners in employment. Third, female labor force participation is measured with the female labor force divided by the total female working-age population aged 15 to 64. For government partisanship, I use share of votes cast for parties classified as left in the most recent election from a report by Brady, Huber, and Stephens (2014). Finally, I use the OECD unemployment rate indicator (2016). Unemployment refers to the percentage of unemployed people within the labor force, where the latter consists of the unemployed plus those in paid jobs or self-employed.

The data sources, coding, and summary statistics of all variables are presented in Table 3.3.

Table 3.3.
Measurement, Data Source, and Summary Statistics of Variables

	Measurement	Data source	Mean (SD)	Min	Max
Gender wage gap (percentage point)	Difference between median earnings of men and women relative to median earnings of men for full-time employees and for self-employed. Gender wage gap is presented as percentage of male median wage.	OECD (2017), Gender wage gap (indicator). doi: 10.1787/7cee77aa-en (Accessed on 18 March 2017)	17.3 (5.1)	6.8	27.2
Leave length (weeks)	Total length of all leave, such as maternity leave, parental leave, and childcare leave	Comparative Family Policy Database by Gauthier (2011)	96.1 (71.9)	0	213.4
Daycare (% of GDP)	Public expenditure on daycare/home-help services under family policy, as a percentage of GDP (Gauthier, 2011).	Comparative Family Policy Database by Gauthier (2011)	.793 (.579)	.004	2.026
Cash expenditure (% of GDP)	Cash expenditure of family benefits in percentage of GDP	OECD retrieved from http://stats.oecd.org/viewhtml.aspx?datasetcode=SOCX_AGG&lang=en	1.605 (.610)	.096	3.047
Female labor force participation	The labor force divided by the total working-age population. The working-age population refers to people aged 15 to 64.	retrieved from https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R	78.9	57.3	90.7
Wage coordination	(The predominant level at which wage bargaining takes place) - (Frequency or scope of additional enterprise bargaining) + (General Opening clauses in collective agreement)/4(=max value) + (Articulation of enterprise bargaining + Derogation -1)/5(=max value)*	Visser, ICTWSS Data base. version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016.	2.54 (1.26)	1	5.35
Unemployment	The number of unemployed people as a	OECD (2016), Unemployment rate	6.8 (2.5)	1.6	16.6

rate (%)	percentage of the labor force, where the latter consists of the unemployed plus those in paid or self-employment.	(indicator). doi: 10.1787/997c8750-en (Accessed on 19 March 2016) retrieved from https://data.oecd.org/unemp/unemployment-rate.htm			
Union density	Net union membership as a proportion of wage earners in employment	Visser, ICTWSS Data base (2016). version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam.	42.0	7.6	87.4
Left vote	Share of votes cast for parties classified as left in the most recent election	Brady, Huber, & Stephens, Comparative Welfare States Data Set (2014), University of North Carolina and WZB Berlin Social Science Center.	39.0	0	56.5
Gross Domestic Products	A monetary measure of the market value of all final goods and services produced in a period	OECD (2017), Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en (Accessed on 11 May 2017)	29769	62434	13228

N= 223; Unit: country-year

* The measurement of coordination of wage is from Visser's indicator.

Analytic methods

I use the pooled time-series analysis that has been widely used in cross-national comparative analysis (Hicks, 1994; Hong, 2014; Rueda & Pontusson, 2000). This approach has a particular merit by increasing the total number of observations in a cross-national comparative study, which is often constrained by the limited number of observations. It also allows for the discerning of cross-national variations and changes over time and for ascertaining the common determinants of such variations and changes (Rueda & Pontusson, 2000, p. 369).

Time-series analysis often violates the standard ordinary least squares (OLS) regression assumptions about the error process (Podesta, 2016) because errors tend not to be independent from one period to the next. They might be serially correlated, such that errors in country i at time t are correlated with errors in country i at time t+1 or they may be correlated across nations. Violation of OLS assumption may produce inconsistent and biased estimates of parameters (Rueda & Pontusson, 2000).

I use three procedures to address the autocorrelation issue associated with time-series pooling of data. First, I include a lagged dependent variable on the right-hand side of the equation. This is widely used in time-series analysis to address the autocorrelation issue (Rueda & Pontusson, 2000). Second, I use Generalized Least Squares (GLS) estimation rather than OLS regression. The GLS estimation procedure is based on less restrictive assumptions than OLS concerning the behavior of regression disturbance by using a varying intercept term in order to capture the differences in behavior over time and space (Judge et al., 1985, p. 519). GLS can be used to perform linear regression when there is a certain degree of correlation between the residuals in a regression model. Third, I specifically model the error terms for each group; in this

study, a country has serial correlation within units and these errors for each country follow a different autoregressive process, assuming that previous values have an effect on current values.

In what follows, I present three GLS estimate equations.[3] The first analysis examines the effects of family policies on the gender wage gap, controlling for market factors in all countries regardless of market economies/welfare regime type.

$$y_{it} = \gamma y_{i,t-1} + \sum_k \lambda_k * x_{kit} + \sum_k \alpha_k z_{kit} + \tau_i + \eta_{it} \quad \text{(A)}$$

where y_{it}refers to the gender wage gap, dependent variable, and λ_k refers to the slopes of the explanatory variables of x_{kit}. x_{kit} includes leave generosity, daycare expenditure, and cash expenditure. z_{kit} are country-level control variables such as unemployment rate, centralization of wage coordination, union density, and female labor participation. γ refers to the slope of the lagged dependent variable, $y_{i,t-1}$.

The second analysis examines the interactive effects of market economies/welfare regimes with family policy on the gender wage gap. This model includes three dummy variables for each market economy/welfare regime and interacts these with independent variables. Even though this is equivalent to estimating three models concurrently, the specific advantage of doing

[3] The estimation equations in this study follow the similar logic with Rueda and Pontusson's research (2000). However, differences in the specific modeling processes are worth noting. First, Rueda and Pontusson (2000) used the instrumental variable (IV) approach in their OLS time-series estimation in order to deal with potential autocorrelation and biased coefficients produced by OLS regression. I do not consider that the IV approach is necessary in my analysis. A GLS model is feasible and produces consistent estimators of predictors in this situation so that there is a certain degree of correlation between the residuals in a regression model. Second, Rueda and Pontusson (2000) controlled unobserved country-level differences by entering the country dummies as the instruments for their instrument variable (IV) estimator. The IV estimator later was used in their main model. I did not include dummy variables for each of the countries in the regression, but I adjusted standard errors across country and time in my estimation. Third, Rueda and Pontusson (2000) used log transformations for all independent variables to get percentage change in dependent variable for percentage change in independent variable. Even though this approach has merit in comparing the effects of percentage change in the independent variable, it may obscure the interpretation of key independent variables in the study because it transforms the unit of them. For example, a week increase in leave length is easier to intuitively interpret than a percentage of change in leave length. Moreover, log transformation does not have merit in this model specification because it does improve the skewed distribution of independent variables.

this is that the results of the interaction model are comparable, making it easy to interpret results in relative terms (Rueda & Pontusson, 2000). The equation below indicates the specific modeling.

$$y_{it} = \gamma y_{i,t-1} + \sum_k \lambda_k * x_{kit} * CME + \sum_k \omega_k * x_{kit} * LME + \sum_k \delta_k * x_{kit} * SME + \sum_k \alpha_k z_{kit} + \tau_i + \eta_{it} \quad \text{(B)}$$

Three dummy variables, CME, LME, and SME, represent CMEs/continental welfare states, LMEs/liberal welfare states, and CMEs/social democratic welfare states, respectively, and interact with the explanatory variables of family policies such as leave generosity, daycare expenditure, and cash expenditure. Each of the coefficients, λ_k, ω_k, and δ_k, shows how each market economy and welfare regime interacts differently with the effects of explanatory variables. x_{kit}. x_{kit} includes leave generosity, daycare expenditure, and cash expenditure. z_{kit} are country-level control variables such as unemployment rate, centralization of wage coordination, union density, and female labor participation. This controls the common impacts of market factors in all countries regardless of market/welfare regime type—equation (A). γ refers to the slope of the lagged dependent variable, $y_{i,t-1}$.

The final stage of analysis further includes the interactions between market economy/welfare regime and all country-level factors to the interaction between market economies and family policies in the above equation (B). In other words, this model controls regime specific impacts of market factors.

$$y_{it} = \gamma y_{i,t-1} + \sum_k \lambda_k * x_{kit} * CME + \sum_k \omega_k * x_{kit} * LME + \sum_k \delta_k * x_{kit} * SME + \sum_k \alpha_k z_{kit} * CME + \sum_k \beta_k z_{kit} * LME + \sum_k \gamma_k z_{kit} * SME + \tau_i + \eta_{it} \quad \text{(C)}$$

Again, x_{kit} are key explanatory variables including leave generosity, daycare expenditure, and cash expenditure. Each of the coefficients, λ_k, ω_k, and δ_k, shows how each market economy interacts differently with the effects of explanatory variables. x_{kit}. z_{kit} are country-level control variables such as unemployment rate, centralization of wage coordination, union density, and female labor participation. Each of the coefficients, α_k, β_k, and γ_k, shows how the effects of country-level control variables such as unemployment rate, left vote, union density, and wage coordination vary by each market economy on the gender wage gap. γ refers to the slope of the lagged dependent variable, $y_{i,t-1}$.

Results

Gender wage gap trends over time

Figure 3.1 provides a graphic summary of the gender wage gap over 28 years. Since 1985, the gender wage gaps in 13 countries have declined. The highest gender wage gap among these countries between 1985 and 2013 is 35.12 percentage points in 1985 in the U.K. It is two times higher than the highest gender wage gap in 2013 (U.S., 17.91 percentage points). Back in the 1980s, data on the gender gap were not yet available for many countries; such data were available for only 5 of the 13 countries. Within this limited dataset, the U.K. and Austria had the highest gender wage gap in 1985. Absolute levels of decline are most visible in the U.S., U.K., and New Zealand, with more than a 15-point reduction in their gender wage gaps. These countries, however, still have the highest gender wage gaps, but this may be a function of the trend toward an overall decrease in the gender wage gap for other countries. Whereas most countries have experienced an overall decrease, Sweden and Austria have maintained a stable gender wage gap. Finland and Sweden had relatively low levels of gender wage gap in the 1990s, but since 2000 they have fallen within the mid-range of gender wage gap.

Despite the decreasing gender wage gap, cross-national variations exist and fall within the market economies/welfare regime clusters to some extent. Particularly, most countries among LMEs/liberal welfare states—the U.S., U.K., Canada, and Australia—form a cluster of the highest level of gender wage gap. However, New Zealand presents a much lower gender wage gap than those of other liberal countries, and in fact shows the lowest level of gender wage gap in 2013 among all countries in this study. Nonetheless, a visible distinction is not obvious between two clusters, the CMEs/continental welfare states and CMEs/social democratic welfare states. Since 2013, the CMEs/social democratic countries, in particular Denmark and Norway, have had the lowest level of gender wage gap, although Sweden and Finland do not conform to this cluster. They present a relatively higher level of gender wage gap than those of CMEs/continental welfare states, such as Belgium. In fact, Finland presents the second highest gender wage gap, which differs from other social democratic countries.

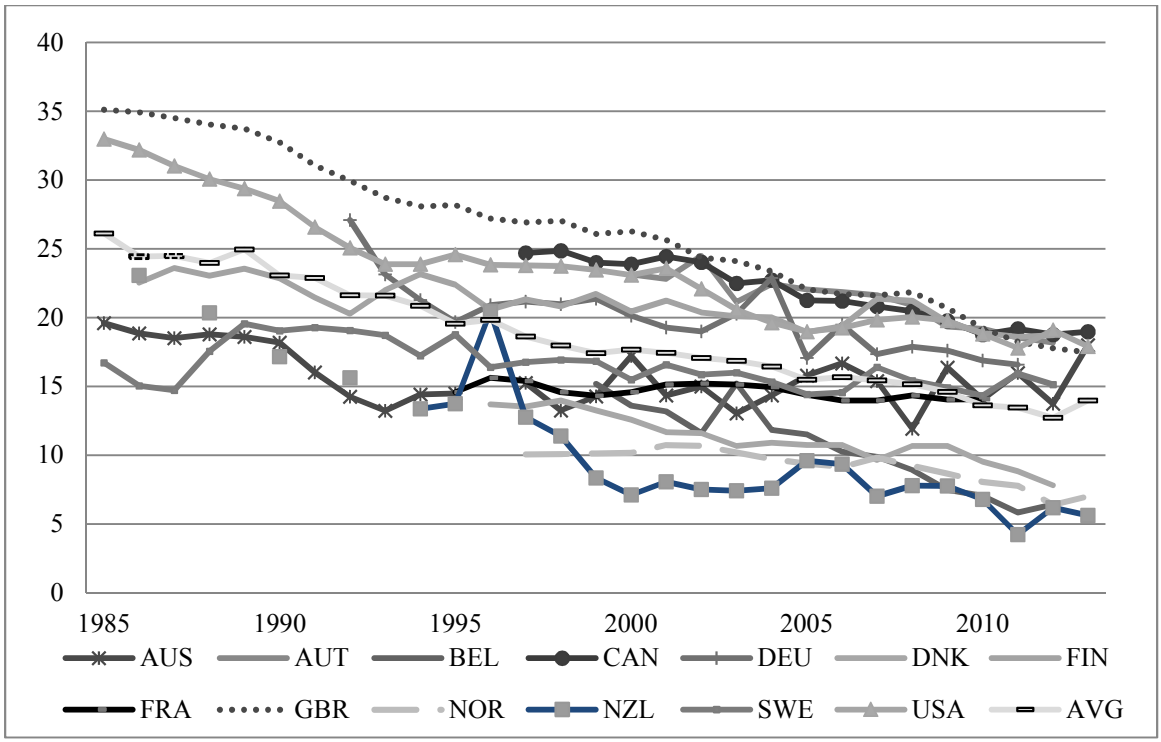


Figure 3.1. Gender Wage Gap in 13 OECD countries (1985-2013)

Source: OECD (2016). Gender wage gap (indicator). doi: 10.1787/7cee77aa-en (Accessed on 18 March 2016) retrieved from https://data.oecd.org/earnwage/gender-wage-gap.htm; Gender wage gap is presented as % of median of male earnings in each country.

Table 3.4.
Changes in the Gender Wage Gap by Country and by Three Market and Welfare Regimes

Market and welfare regime	Country	Period (year)	Gender wage gap (%)			
			Start year	End year	Change (percentage point)	% of change
LME/liberal	Australia	1985 - 2013	19.6	18.0	-1.6	8.2%
	Canada	1997 - 2013	24.7	19.0	-5.7	23.2%
	New Zealand	1986 - 2013	23.1	5.6	-17.5	75.6%
	U.K.	1985 - 2013	35.1	17.5	-17.6	50.2%
	U.S.	1985 - 2013	33.0	17.9	-15.1	45.7%
CME/continental	Austria	2000 - 2012	23.1	18.2	-4.9	21.4%
	Belgium	1999 - 2012	15.2	6.4	-8.8	57.8%
	France	1995 - 2010	14.6	14.1	-0.5	3.5%
	Germany	1992 - 2011	27.1	16.6	-10.5	38.8%
CME/social democratic	Denmark	1996 - 2012	13.7	7.8	-5.9	43.1%
	Finland	1986 - 2012	22.5	18.7	-3.8	16.9%
	Norway	1997 - 2013	10.1	7.1	-3.0	29.7%
	Sweden	1985 - 2012	16.7	15.1	-1.6	9.5%

Source: OECD (2016). Gender wage gap (indicator). doi: 10.1787/7cee77aa-en (Accessed on 18 March 2016) retrieved from https://data.oecd.org/earnwage/gender-wage-gap.htm; Gender wage gap is presented as % of median of male earnings in each country. Change in gender wage gap is presented as percentage point.

Association between family policy and the gender wage gap

I present relations between family policies and the gender wage gap for three different market economies/welfare regimes in Figures 3.2 to 3.4. Pooling all countries without accounting their institutional contexts, especially market economy/welfare regime contexts may disguise varying relations between family policies and the gender wage gap by market economy/welfare regime. The figures below generally map onto the associations between parental leave, childcare, and cash expenditure and gender wage gap for all countries in

Appendix 3.2, except the case of the association between cash expenditure and gender wage gap for CMEs/continental welfare states.

Figure 3.2 illustrates the relations between daycare expenditure and the gender wage gap by the three different market economy/welfare regimes. Each of the fitted linear lines is estimated without accounting for other variables or controlling for data structures (e.g., autocorrelation or heteroskedasticity of error terms). The scatter plot shows general association between daycare and the gender wage gap and, further, whether this correlation varies by market/welfare regime. Both LMEs/liberal welfare states and CMEs/continental welfare states have clear negative associations between daycare expenditure and gender wage gap. In other words, in these market/welfare regimes, an increase in daycare expenditure is likely to be associated with a lower level of gender wage gap. However, this association is much weaker in the CME/social democratic welfare states than in the LME/liberal welfare states.

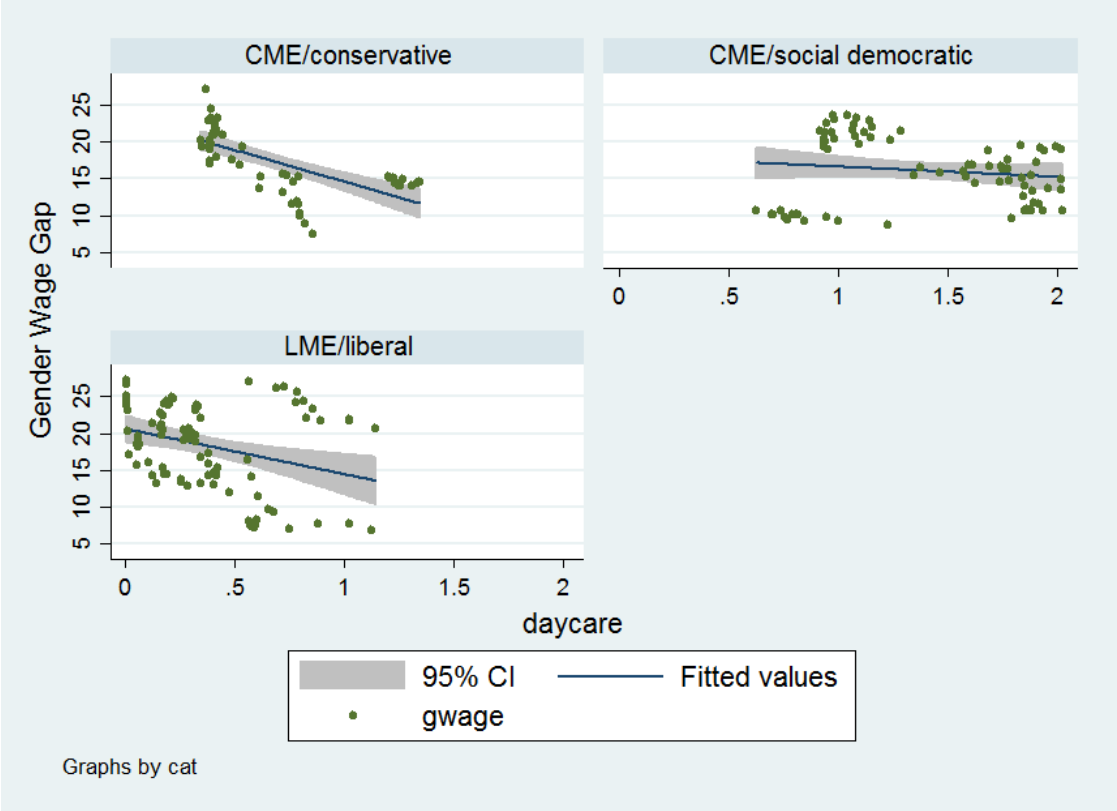


Figure 3.2. Scatter Plot for the Association between Daycare and Gender Wage Gap by Three Market Economy/Welfare regimes

The scatter plot for correlation between the gender wage gap and leave length (Figure 3.3) also indicates that relations vary among the three different market/welfare regimes. As noted in the previous section, the length of leave in LMEs/liberal welfare regimes is relatively shorter than those in CMEs/continental or CMEs/social democratic welfare states. In all market economies and welfare regimes, leave length is likely to be associated with a higher level of gender wage gap.

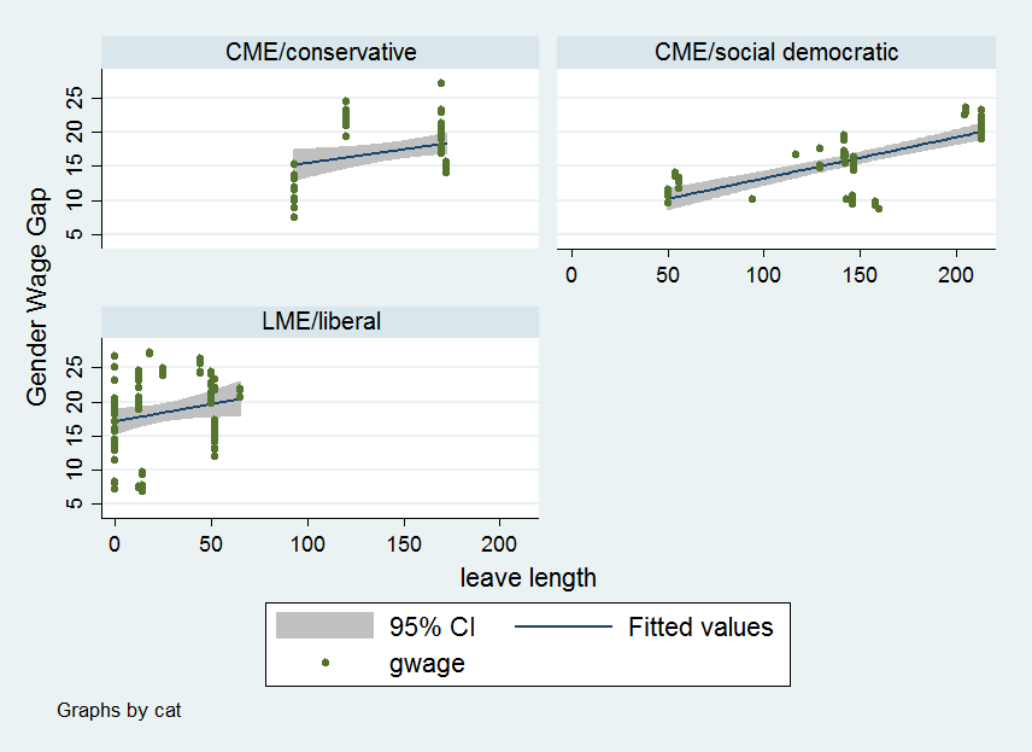


Figure 3.3. Scatter Plot for the Association between Leave Length and Gender Wage Gap by Three Market Economy/Welfare Regimes

Figure 3.4 shows the association between family cash expenditure and gender wage gap by market/welfare regime. Specific associations with market economy/welfare regimes emerge. Whereas the associations of family expenditure with gender wage gap in both CMEs/continental and CMEs/social democratic welfare regimes are positive, the association between family expenditure and gender wage gap in the LME regime is negative. In other words, in CMEs/continental welfare states, higher state family expenditure is associated with a greater gender wage gap and in LMEs/liberal welfare states, higher state family expenditure is associated with a lower gender wage gap.

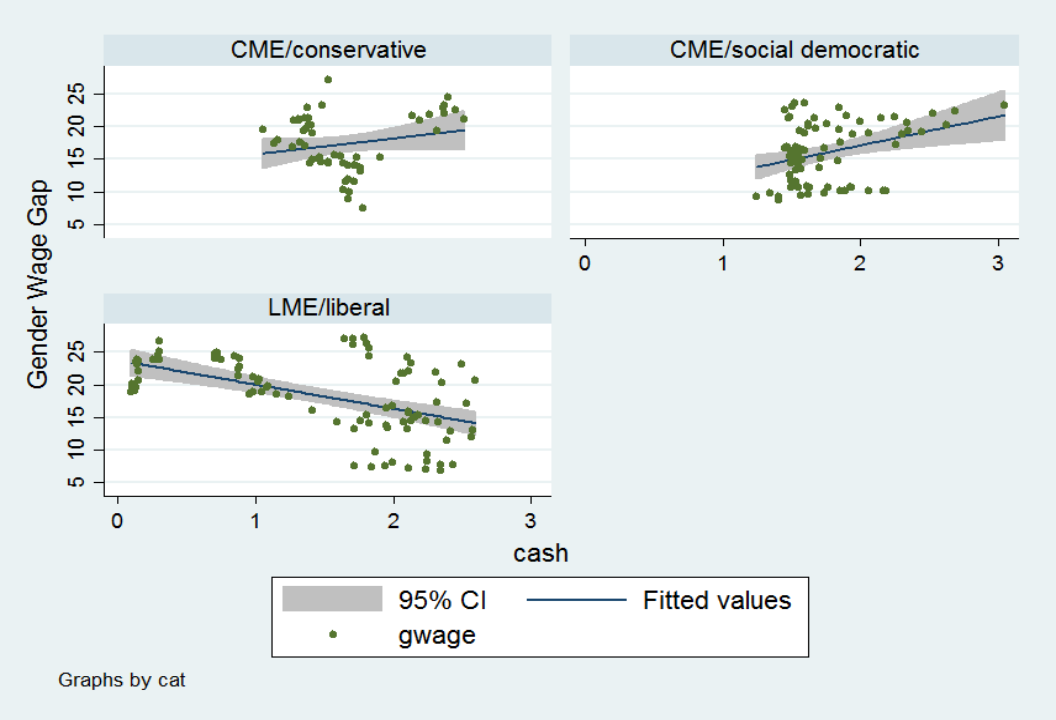


Figure 3.4. Scatter Plot for the Association between Cash Benefits and Gender Wage Gap by Three Market Economy/Welfare regimes

Family policy and the gender wage gap

The general effects of market factors and family policies based on model A specified above are presented in Table 3.5. Most factors perform as predicted, with the exception of centralization of wage bargaining. Centralization of wage bargaining is a meaningful predictor for wage inequality in general. However, it may not be a predictor for the gender wage gap, especially when we account for family policies of daycare or cash expenditure that may have gender-specific effects.

The effect of union density is associated with higher gender wage gap. I infer this because union density compresses wage inequality overall but not necessarily for the gender wage gap. When the union exclusively supports insiders within the union membership in the labor market (Rueda, 2005), female workers are likely to be disproportionately disadvantaged. In contrast, left vote is negatively associated with gender wage gap.

The unemployment rate is associated with a lower gender wage gap. Unemployment may put downward pressure on the wages of unskilled workers, mostly female workers, but it may be possible that a higher unemployment rate leads some female workers with lower skills to be out of the labor market, rendering the overall gender wage gap lower.

For the variables of interest in this study, daycare is associated with a lower gender wage gap ($b=-3.536$, $p<.01$), supporting the expectation that childcare support is critical for female employment and career development and further wage accumulation. Leave generosity is associated with a higher gender wage gap ($b=.019$, $p<.001$). This finding may contradict previous research that found a positive association between job protected leave and female employment (Berger, Hill, & Waldfogel, 2005; Klerman & Leibowitz, 1997) but is aligned with my expectation. Finally, cash expenditure is negatively associated with gender wage gap ($b=-.979$, $p<.01$), suggesting that family cash expenditures play a role in reducing gender wage gap.

Table 3.5.
The Effects of Leave Length, Daycare, and Cash Expenditure on the Gender Wage Gap in 13 Countries (1985-2012)

	Model (A)	
	Coefficients and Standard errors	p-value
Leave length	.019 (.004)	.000
Daycare	-3.536 (.490)	.000
Cash expenditure	-.979 (.310)	.002
Unemployment rate	-.207 (.066)	.002
Centralization of wage coordination	-.250 (.177)	.157
Left vote	-.045 (.017)	.008
Union density	.034 (.011)	.002
Female labor force participation	.132 (.054)	.015
Logged GDP	-3.111 (.565)	.000
Lagged gender wage gap	.522 (.043)	.000

The results of further analysis for estimating institutional complexity, that is, the varying effects of family policy in different market/welfare regimes, are presented in Table 3.6. The coefficients and p-values of leave length and daycare are presented for each of three different market economies/welfare regimes. I regress the level of gender wage gap on specific interactions of childcare, leave generosity, and cash expenditure by market economy type. I also include common country-level labor institutions and economic indicators as controls but do not control their potentially varying effects on the three different market economies/welfare regimes.

Daycare support is associated with lower gender wage gap in all market economies/welfare regimes. This is consistent with the previous analysis and is aligned with my expectation and previous research findings. The daycare effect in reducing gender wage gap is greatest in CMEs/continental welfare states, followed by LMEs/liberal welfare states. The effect of daycare, which was significant in the previous model, does become insignificant in CMEs/social democratic welfare states.

The differences among market economies/welfare regimes are more striking with respect to the effect of cash expenditures, for the signs of the coefficients differ. Compressing the gender wage gap effects of cash expenditures occurs under the LMEs/liberal welfare regime (b=-1.738, p<.001) and CMEs/social democratic welfare regime (b=-2.632, p<.001). The coefficient for cash expenditures is positive in the CMEs/continental welfare states (b=1.717, p<.01).

Leave generosity is associated with a higher gender wage gap in CMEs/social democratic welfare states (b=.025, p<.001) and LMEs/liberal welfare states (b=.086, p<.001). The effect of leave generosity in CMEs/continental welfare states is not significant in this model.

Table 3.6.
The Effects of Leave Length, Daycare, and Cash Expenditure on the Gender Wage Gap by Market Economy/Welfare Regime (1985–2012)

	CME/continental		CME/social democratic		LME/liberal	
	Coef. (S.E)	*P-value*	*Coef. (S.E)*	*P-value*	*Coef. (S.E)*	*P-value*
Leave length	.011 (.008)	.162	.025 (.006)	.000	.086 (.012)	.000
Daycare	-8.139 (1.147)	.000	-.383 (.785)	.625	-3.916 (1.166)	.001
Cash	1.717 (.580)	.003	-2.632 (.680)	.000	-1.738 (.518)	.001
Union density	-.023 (.025)	.356				
Unemployment rate	.030 (.070)	.668				
CWB	.090 (.188)	.633				
LFP	.135 (.055)	.014				
Left vote	-.072 (.022)	.001				
Logged GDP	-6.000 (.691)	.000				
Lagged gender wage gap	.413 (.042)	.000				

CWB: Centralization of wage bargaining; LFP: female labor force participation.
The effects of centralization of wage coordination, union density, unemployment rate, left vote, and GDP are presented in the column of coordinated market economies/continental welfare states.

The final model is presented in Table 3.7. This model not only accounts for interactive effects between family policies and market economies/welfare regimes but also controls varying effects of labor market conditions in the three different categories.

The effects of daycare on reducing the gender wage gap are statistically significant in the LMEs/liberal welfare countries and in CMEs/continental welfare regimes. However, the significance of daycare disappears in CMEs/social democratic welfare states, and its direction changes as well.

The coefficients of leave generosity are significantly positive on the gender wage gap for all market/welfare regimes. This aligns with my expectation that leave generosity in the coordinated market economies is likely to lead to a greater gender wage gap by producing a gender occupation gap and promoting employers' hesitance to employ female workers. This effect is greater in two CMEs (both CMEs/continental and CMEs/social democratic welfare states) than in LMEs.

The differences among market economies/welfare regimes remain consistent with respect to the effect of cash expenditures from the previous model. Compressing the gender wage gap effects of cash expenditures occurs under the LMEs/liberal welfare regime ($b=-1.775$, $p<.01$) and the CMEs/social democratic welfare states ($b=-1.769$, $p<.05$). The coefficient for cash expenditures is positive in the CMEs/continental welfare states ($b=4.134$, $p<.001$).

Table. 3.7.
Moderating Effects of Leave Length, Daycare, and Cash Expenditure on the Gender Wage Gap by Market Economies/Welfare Regimes (1985–2012)

	Model (A)					
	CME/continental		CME/social democratic		LME/liberal	
	Coef. (S.E)	*P-value*	*Coef. (S.E)*	*P-value*	*Coef. (S.E)*	*P-value*
Leave length	.108	.000	.042	.000	.066	.000
	(.023)		(.009)		(.025)	
Daycare	-4.637	.000	.058	.960	-4.298	.001
	(1.222)		(1.151)		(1.271)	
Cash	4.134	.000	-1.769	.014	-1.775	.001
	(1.083)		(.534)		(.534)	
Union density	.053	.403	.125	.050	.214	.000
	(.064)		(.064)		(.058)	
Left vote	.056	.322	-.122	.009	-.142	.000
	(.056)		(.047)		(.030)	
Unemployment rate	-.701	.000	.063	.599	-.326	.015
	(.184)		(.119)		(.134)	
Centralization of wage bargaining	.610	.413	-.083	.722	-.135	.786
	(.745)		(.235)		(.496)	
Female labor force participation	-.073	.710	.182	.248	.038	.782
	(.195)		(.158)		(.137)	
Logged GDP	-2.903	.188	-3.825	.000	-1.460	.412
	(2.204)		(.870)		(1.781)	

Lagged gender wage gap is controlled.

Robustness test

These results may be responsive to the categorization of market and welfare clusters. Despite the fact that welfare regime hinges on empirical clusters of redistributive institutions, market regime distinction stems from the theoretical ideology typologies of liberal and coordinated market economies. This may make it hard to categorize some cases, for example, France. France is sometimes categorized as a mixed economy that presents both coordinated and liberal market structures (Rueda & Pontusson, 2000). I test whether the interactive impacts of family policies by different market economies and welfare regime conditions without unclear case, France. This model shows that the main findings are robust. In addition, due to high correlation between female labor participation and daycare presented in Appendix 3.3, I ran sensitivity tests with no female labor participation. Despite changes in magnitudes of coefficients, the overall directions of impacts of independent factors are identical.

Discussion

The present study seeks to answer whether and how effects of family policies vary across market/welfare regimes. The extent to which family policy affects the gender wage gap may hinge on how the market economy/welfare regime as a whole is organized in each country. My analysis suggests that it may be useful to introduce the VoC idea to understand the puzzle of why family policy produces a higher gender wage gap for certain systems of advanced capitalism. This study pushes the current research forward from a question of how family policy matters to a question of "what kinds of"' family policy matters in "which" market economies, and it underscores the mediating roles of institutional contexts on family policy.

Complex relations between market economies/welfare regimes and family policy emerge in this study, confirming that the effect of family policy in reducing the gender wage gap is not

universal across countries. Most strikingly, the effect of cash expenditure varies by market economy and welfare regime type. In the LMEs/liberal welfare regime and the CMEs/social democratic welfare regime, a negative association between cash expenditure and gender wage gap is found, but the direction is opposite in the CMEs/continental welfare regime states. This discrepancy may also result from the fact that the characteristics and policy focus of cash expenditures differ across countries. Tax credits such as the Earned Income Tax Credit are commonly used to encourage mothers to participate in the labor market in LMEs whereas CMEs/continental welfare states often depend on support through a cash allowance that leads women to play a more gendered role, staying at home. Future study could further investigate whether these varying effects result from different types of cash expenditures, such as tax credits or cash allowance.

Despite the fact that CMEs/social democratic welfare states maintain the strongest family policies, the impacts of family policy on the gender wage gap are less salient than in other market and welfare regimes. A strong association between childcare and a lower gender wage gap is found in the CMEs/continental welfare states and LMEs/liberal welfare states but not in CMEs/social democratic welfare states. With respect to CMEs/social democratic welfare regimes, the significance of daycare disappears when taking into account market-specific effects of labor institutions and market conditions. This finding partially supports the expectation that the magnitude of its impacts is contingent even within CMEs but is not aligned with the expectation that the effect of daycare in reducing the gender wage gap is greater in CMEs than in LME regimes.

The coordinated institutions with egalitarian mechanisms in CMEs/social democratic welfare states may mitigate or mute family policy impacts, whereas uncoordinated institutions or

coordinated, but less egalitarian, market and welfare regimes amplify roles of family policies in reducing the gender wage gap. The LMEs/liberal welfare states, which demonstrate the least active and generous family policies, show the most extensive impact of family policies in reducing the gender wage gap. This may result from the lack of strong labor institutions that potentially exert power to compress the gender wage gap.

The finding that leave generosity is associated with a higher gender wage gap for all market and welfare regimes is not aligned with my expectation that leave generosity in LMEs/liberal welfare regimes would either have no association with gender wage gap or be associated with a lower gender wage gap. The availability and length of job-protected leave have been empirically found to increase women's labor force attachment and career progress after childbirth by guaranteeing job security during their leave time (Gornick & Meyers, 2008; Kluve & Tamm, 2013; Pettit & Hook, 2005), which may result in increases in female wage. However, this study's results show that leave generosity is associated with higher gender wage gap. Perhaps, a generous leave policy induces women to stay home to provide caregiving to their children, losing their skills while taking leave and further leading some of them to drop out of the labor market. Mandatory leave policies also provide more incentives to employers to discriminate against female workers than high level childcare policy does because of extra costs for replacement of female workers or training for return (Estevze-Abe, 2005). The finding, however, supports the hypothesis that a positive association between leave generosity and gender wage gap is greatest in CMEs/continental welfare states suggesting that the political economy of CMEs/continental welfare states exacerbates its impacts on the gender wage gap.

Bringing VoC approaches and integrating them with welfare regime analyses provides insights into the current comparative family policy regimes by highlighting the understanding of

institutional arrangements—as a whole system. Neither family policy nor skill profile is the single crucial driving force shaping female employment; market economy and welfare regime types taken together as institutional arrangements need to be considered as a whole. The present study also suggests a further distinction among coordinated market economies (Iversen, 2005; Thelen, 2012). The varying effects of family policy and labor institutions by the two types of CMEs not only imply different determinants of the gender wage gap between CMEs/continental and CMEs/social democratic welfare states, but also support the necessity to distinguish between these two political economies.

Finally, the present study also highlights the multiple dimensions of gender inequality and trade-offs of family policy in achieving gender equality. Leave generosity is well known for improving labor force participation for female workers, but it can increase the gender wage gap.

References

Aisenbrey, S., Evertsson, M., & Grunow, D. (2009). Is there career penalty for mothers' time out? A comparison of Germany, Sweden and the United states. *Social Forces*, *88*(2), 573-605.

Berger, L. M., Hill, J., & Waldfogel, J. (2005). Maternity leave, early maternal employment and child health and development in the U.S. *The Economic Journal*, *115*(501), 29–47. http://doi.org/10.1111/j.0013-0133.2005.00971.x

Blau, F., & Kahn, L. (2003). Understanding international differences in the gender pay gap. *Journal of Labor Economics*, *21*(1), 106–144. http://doi.org/10.3386/w8200

Boeckmann, I., Misra, J., & Budig, M. J. (2015). Cultural and institutional factor shaping mothers' employment and working hours in postindustrial countries. *Social Forces, 93(4),* 1301-1333.

Brady, D., Huber, E., & Stephens, J. (2014). Comparative Welfare States Data Set, University of North Carolina and WZB Berlin Social Science Center.

Charles, M. (2005). National skill regimes, postindustrialism, and sex segregation. *Social Politics*, *12*(2), 289–316. http://doi.org/10.1093/sp/jxi015

Charles, M., Buchmann, M., Halebsky, S., Powers, J. M., & Smith, M. M. (2001). The context of women's market careers – a cross-national study. *Work and Occupations*, *28(3),* 371–96.

Datta Gupta, N., Smith, N., & Verner, M. (2006). Child care and parental leave in the Nordic countries: a model to aspire to? Bonn, Germany: Institute for the Study of Labor.

Ebbinghaus, B., & Manow, P. (Eds.). (2001). *Comparing welfare capitalism: Social policy and political economy in Europe, Japan, and the USA. Ne*w York, NY: Routledge.

Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton, NJ: Princeton University Press.

Estevez-Abe, M. (2005). Gender bias in skills and social policies: The varieties of capitalism perspective on sex segregation. *Social Politics*, *12*(2), 180–215. http://doi.org/10.1093/sp/jxi011

Evertsson, M., Grunow, D., & Aisenbrey, S. (2016). Work interruptions and young women's career prospects in Germany, Sweden and the U.S. *Work, Employment, and Society, 30*(2), 291-308.

Frege, C., & Godard, J. (2014). Varieties of capitalism and job quality: The attainment of civic principles at work in the United States and Germany. *American Sociological Review*, *79*(5), 942–965. http://doi.org/10.1177/0003122414548194

Gauthier, A.H. (2011). Comparative Family Policy Database, Version 3 [computer file]. Netherlands Interdisciplinary Demographic Institute and Max Planck Institute for Demographic Research (distributors). Retrieved from: www.demogr.mpg.de

Gornick, J. C., & Meyers, M. K. (2008). Creating gender egalitarian societies: An agenda for reform. *Politics & Society*, *36*(3), 313–349. http://doi.org/10.1177/0032329208320562

Grönlund, A., & Magnusson, C. (2016). Family-friendly policies and women's wages – is there a trade-off? Skill investments, occupational segregation and the gender pay gap in Germany, Sweden and the U.K. *European Societies, 18,* 91-113.

Hall, P., & Soskice, D. (2001). *An introduction to varieties of capitalism*. New York, NY: Oxford University Press.

Hicks, A. M. (1994). Introduction to pooling. In T. Janoski & A. M. Hicks (Eds.), *The comparative political economy of the welfare state* (pp. 169-188). Cambridge, UK: Cambridge University Press.

Hong, I. (2014). Trends and determinants of social expenditure in Korea, Japan and Taiwan. *Social Policy and Administration, 48*(6), 647-665.

Huber, E., & Stephens, J. D. (2000). Partisan governance, women's employment, and the social democratic service state. *American Sociological Review*, *65*(3), 323–342. http://doi.org/10.2307/2657460

Huber, E., & Stephens, J. D. (2001). *Development and crisis of the welfare state*. Chicago, IL: The University of Chicago Press.

Iversen, T. (2005). *Capitalism, democracy, and welfare*. New York, NY: Cambridge University Press.

Iversen, T., & Soskice, D. (2001). An asset theory of social policy preferences. *American Political Science Review*, *95*(4), 875–893.

Iversen, T., & Soskice, D. (2006). Electoral institutions and the politics of coalitions: Why some democracies redistribute more than others. *American Political Science Review*, *100*(2), 165–181.

Iversen, T., & Stephens, J. D. (2008). Partisan politics, the welfare state, and three worlds of human capital formation. *Comparative Political Studies*, *41*(4–5), 600–637. http://doi.org/10.1177/0010414007313117

Judge, G. G., Griffiths, W. E., Hill, R. C., Lutkepohl, H., & Lee, T-C. (1985). *The theory and practice of econometircs* (2nd ed). New York, NY: Wiley.

Kang, J. Y., & Meyers, M. K. (in press). Family policy changes across welfare and production regimes, 1990 to 2010. In G. B. Eydal & T. Rostgaard (Eds.). *Handbook of child and family policy.* Northampton, MA: Edward Elgar.

Klerman, J., & Leibowitz, A. (1997). Labor supply effects of state maternity leave legislation. In F. D. Blau & R. G. Ehrenberg (Eds.), *Gender and Family Issues in the Workplace* (pp. 65-85). New York, NY: Russell Sage Foundation.

Korpi, W. (2006). Power resources and employer-centered approaches in explanation of welfare

states and varieties of capitalism - Protagonists, consenters, antogonist. *World Politics, 58(2),* 167-206

Korpi, W., Ferrarini, T., & Englund, S. (2013). Women's opportunities under different family policy constellations: Gender, class, and inequality tradeoffs in western countries re-examined. *Social Politics*, *20*(1), 1–40. http://doi.org/10.1093/sp/jxs028

Mandel, H., & Semyonov, M. (2005). Family policies, wage structures, and gender gaps : Sources of earnings inequality in 20 countries. *American Sociological Review*, *70*(6), 949–967.

Mandel, H., & Semyonov, M. (2006). A welfare state paradox: State interventions and women's employment opportunities in 22 countries. *American Journal of Sociology*, *111*(6), 1910–1949. http://doi.org/doi:10.1086/499912

Mandel, H. (2009). Configurations of gender equality: The consequences of ideology and public policy. *The British Journal of Sociology, 60*(4), 693–719.

Mandel, H. (2012). Winners and losers: The consequences of welfare state policies for gender wage inequality. *European Sociological Review, 28*(2), 241–262.

Mandel, H., & Shalev, M. (2009a). Gender, class, and varieties of capitalism. *Social Politics*, *16*(2), 161–181. http://doi.org/10.1093/sp/jxp006

Mandel, H., & Shalev, M. (2009b). How welfare states shape the gender pay gap: A theoretical and comparative analysis. *Social Forces*, *87*(4), 1873–1911.

Martin, C. J., & Thelen, K. (2007). Contributions of the public sector to social solidarity in postindustrial societies. *World Politics*, *60*(1), 1–36.

Morgan, K. J. (2005). The "production" of child care: How labor markets shape social policy and vice versa. *Social Politics*, *12*(2), 243–263. http://doi.org/10.1093/sp/jxi013

Nieuwenhuis, R., Need, A., & Kolk, H. V. D. (2012), Institutional and demographic explanations of women's employment in 18 OECD countries, 1975–1999, *Journal of Marriage and Family*, *74*(3), 614–630.

O'Connor, J. S. (1993). Gender, class and citizenship in the analysis of welfare state regimes : comparative issues theoretical and methodological issues. *The British Journal of Sociology*, *44*(3), 501–518.

OECD. (2016). Gender wage gap (indicator). doi: 10.1787/7cee77aa-en (Accessed on 23 February 2016)

OECD. (2016). Gross Domestic Product (indicator) retrieved from: https://stats.oecd.org/index.aspx?queryid=60702

Orloff, A.S. (2002). Women's employment and welfare regimes: Globalization, export orientation and social policy in Europe and North America. Social Policy and Development Programme Paper Number 12. United Nations Research Institute for Social Development.

Pettit, B., & Hook, J. (2005). The structure of women's employment in comparative perspective. *Social Forces*, *84*(2), 779–801. http://doi.org/10.1353/sof.2006.0029

Pierson, P. (2001). *The new politics of the welfare state*. New York, NY: Oxford University Press.

Podesta, F. (2016). Recent developments in quantitative comparative methodology: The case of pooled time series corss-section analysis. DSS paper SOC 3-02. retreived from: http://docplayer.net/388149-Recent-developments-in-quantitative-comparative-methodology.html

Ray, R., Gornick, J. C., & Schmitt, J. (2010). Who cares? Assessing generosity and gender equality in parental leave policy designs in 21 countries, *Journal of European Social Policy*, *20(3),* 196–216.

Rubery, J. (2009). How gendering the varieties of capitalism requires a wider lens. *Social Politics: International Studies in Gender, State & Society*, *16*(2), 192–203. http://doi.org/10.1093/sp/jxp012

Rueda, D. (2005). Insider-outsider politics in industrialized democracies: The challenge to social democratic parties. *American Political Science Review*, *99*(1), 61–74.

Rueda, D., & Pontusson, J. (2000). Wage inequality and varieties of capitalism. *World Politics*, *52*(3), 350–383. http://doi.org/10.1353/wp.2000.0011

Schroeder, M. (2009). Integrating welfare and production typologies: How refinements of the varieties of capitalism approach call for a combination of welfare typologies. *Journal of Social Policy*, *38*, 19–43. http://doi.org/10.1017/S0047279408002535

Soskice, D. (2005). Varieties of capitalism and cross-national gender differences. *Social Politics*, *12*(2), 170–179. http://doi.org/10.1093/sp/jxi010

Thelen, K. (2012). Varieties of capitalism: Trajectories of liberalization and the new politics of social solidarity. *Annual Reviews of Political Science*, *15*. 137-159.

Tomaskovic-Devey, D., & Skaggs, S. (1999). An establishment-level test of the statistical discrimination hypothesis. *Work and Occupations*, *26*(4), 422–445. http://doi.org/10.1177/0730888499026004003

Tomlinson, J. (2007). Employment regulation, welfare and gender regimes : A comparative analysis of women's working-time patterns and work – life balance in the U.K. and the U.S. *The International Journal of Human Resource Management*, 18(3), 401–415. http://doi.org/10.1080/09585190601167466

Visser, J. (2006). Union membership statistics in 24 countries. *Monthly Labor Review, 129*(1), 38-49.

Visser, J. (2016). Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention, and Social Pacts (ICTWSS). Version 5.1. Amsterdam: Amsterdam Institute for Advanced Labor Studies (AIAS), University of Amsterdam.

CONCLUSION

In this dissertation project, I have examined the role of institutions on economic status for low-income families and on gender inequality. Individual outcomes, such as welfare use or employment participation are unlikely to be adequately explained only by individual-level differences; institutional conditions of social policy and market economies are crucial to understanding the patterns of the outcomes.

Paper 1 evaluated the causal inference of policy effect that state paid maternity leave reduces TANF use for low-income mothers, suggesting that paid maternity leave provides an economic means of supports during time off around child birth. This economic benefit would improve short-term maternal economic well-being and long-term self-sufficiency for reducing an initial entry to TANF that might be associated with future use.

The study findings indicate that while state paid maternity leave reduces welfare use among low-income families, the extent of reduction in TANF use varies across states. This results from the differences in paid maternity leave program rules such as those governing the relative generosity or restrictiveness of eligibility criteria. This finding further suggests various program rules that might be used to provide low-income mothers with economic support during the inevitable job interruption after childbirth.

In Paper 2, I examined the effects of market institutions and family policy on the gender gap in employment in order to understand cross-national variations in the gender employment gap. Although individual circumstances and preferences do explain variations to a considerable extent, the importance of determinants at the institutional level has proven important as well.

Paper 2 findings show that work and publically supported childcare and leave entitlements are associated with smaller gaps in employment participation between male and

female by strengthening women's continued attachment to employment. However, leave generosity does not have significant impact on decreasing the gender employment gap when it comes to extensively long leave. In addition, market institutions matter. The coordinated market economies with higher specific skill profiles are associated with smaller gender gaps in employment participation. This finding of the importance of market institutions to understand female employment has a significant implication because little is known about the role of market economies shaping female employment, whereas the role of family policy on female employment is well established.

In Paper 3, I examined the extent to which family policy affects on the gender wage gap hinges on different market and welfare regimes, i.e., how each country organizes its market coordination and welfare institutions. In liberal market/welfare countries, cash expenditure is associated with a smaller gender wage gap, but the direction of cash expenditure effect on the gender wage gap is opposite in the CME/continental welfare states. The coefficients of leave generosity for liberal market/welfare regimes and CME/continental welfare states are positive on the gender wage gap, but the magnitude of its impact in CME/continental welfare states is much larger. The effects of daycare on reducing the gender wage gap are only statistically significant in the liberal market/welfare countries and in CME/continental welfare regimes, but not in coordinated/social democratic welfare states.

My analysis suggests that it may be useful to introduce the varieties-of-capitalism idea to understand the puzzle of why family policy produces a higher gender wage gap for certain systems of advanced capitalism. Neither family policy nor skill profile is the single crucial driving force shaping female employment, but market economies and welfare regimes taken together as institutional arrangements need to be considered as a whole.

The present dissertation project is relevant for several areas of social work scholarship and practice, in particular, poverty, gender disparities, and family economic well-being. It provides timely and policy-relevant evidence for the current U.S. contexts, especially in terms of policy formulation and introduction of paid maternity leave in various states, some of which have passed paid family leave laws (Washington State, for example) or are considering such legislation. Paid maternity leave can be an important policy to help balance the competing responsibilities of work and family. It can promote economic well-being for individual workers by protecting income and employment from the adverse effects of family issues such as illness or childbirth, which will, in turn, become a driving force to economic growth. It may further produce important consequences for low-income mothers by leading them to avoid relying on public assistance programs, which often have pejorative stigma and fewer work incentives.

The cross-national comparative perspectives in Papers 2 and 3 also have implications for an understanding of poverty and inequality and for the improvement of social policies in the United States. As a liberal market economy and liberal welfare regime, the United States has the least powerful state efforts and social policies to reduce poverty and correct market failures, but has the most powerful influence by the market. This may mean that social policies in other affluent democracies (counterparts) do not work for the United States given the influence of market structures. Taking account of the influence of market economies may yield knowledge on suitable social policies that would have impacts under the U.S. conditions.

Finally, this research promotes theoretical conversations in cross-national comparative social policy and adds new evidence on the role of market economies that social work research and practice have not yet focused on.

BIBLIOGRAPHY

Aisenbrey, S., Evertsson, M., & Grunow, D. (2009). Is there career penalty for mothers' time out? A comparison of Germany, Sweden and the United states. *Social Forces*, *88*(2), 573-605.

Baker, M., Gruber, J., Milligan, K., Journal, S., August, N., & Baker, M. (2008). Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy*, *116*(4), 709–745.

Becker, G. S. (1965). A theory of the allocation of time. *Economic Journal*, *75*, 493–517.

Berger, L. M., Hill, J., & Waldfogel, J. (2005). Maternity leave, early maternal employment and child health and development in the U.S. *The Economic Journal*, *115*(501), 29–47. http://doi.org/10.1111/j.0013-0133.2005.00971.x

Blau, F. D., & Kahn, L. M. (2003). Understanding international differences in the gender pay gap. *Journal of Labour Economics*, *21*(1), 106–144.

Blundell, R., & MaCurdy, T. E. (1999). Labor supply: A review of alternative approaches. In O. Ashenfelter & D. Card (Eds.), *Handbook of Labor Economics*, Vol. 3 (pp. 1559–1696). Amsterdam: Elsevier Science.

Boeckman, I., Misra, J., & Budig, M. (2015). Cultural and institutioanl factors shaping mother employment and working hours in postindustrial countries. *Social Forces, 93*(4), 1301-1333.

Bonoli, G. (2005). The politics of the new social policies: providing coverage against new social risks in mature welfare states. *Policy and Politics*, *33*(3), 431–449. http://doi.org/10.1332/0305573054325765

Brady, D. (2005). The welfare state and relative poverty in rich western democracies, 1967-1997, *Social Forces*, *83*(4), 1329–1364.

Brady, D., Huber, E., & Stephens, J.D. (2014). Comparative welfare states data set, University of North Carolina and WZB Berlin Social Science Center.

Budig, M. J., & England, P. (2001). The wage penalty for motherhood. *American Sociological Review*, *66*(2), 204–225. http://doi.org/10.2307/2657415

Budig, M. J., Misra, J., & Boeckmann, I. (2012). The motherhood penalty in cross-national perspective : The importance of work-family policies and cultural attitudes. *Social Politics, 19*(2), 163-193.

Burgess, S., Gregg, P., Propper, C., & Washbrook, E. (2008). Maternity rights and mothers' return to work. *Labour Economics*, *15*(2), 168–201. doi:10.1016/j.labeco.2005.05.010

Charles, M. (2005). National skill regimes, postindustrialism, and sex segregation. *Social Politics*, *12*(2), 289–316. http://doi.org/10.1093/sp/jxi015

Charles, M., Buchmann, M., Halebsky, S., Powers, J. M., & Smith, M. M. (2001). The context of

women's market careers – a cross-national study. *Work and Occupations*, *28(3),* 371–96.

Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R., & Narang, J. (2016). The fading American dream: Trends in absolute income mobility since 1940. NBER Working Paper Series. 22910. Retreived from http://www.nber.org/papers/w22910

Connelly, R. (1992). The effect of child care costs on married women's labour force particiaption. *Review of Economics and Statistics*, *74*(1), 83–90.

Connelly, R., & Kimmel, J. (2003). Marital status and full – time / part – time work status in child care choices. *Applied Economics*, *35*(7), 761–777. http://doi.org/10.1080/0003684022000020841

Datta Gupta, N., Smith, N., & Verner, M. (2006). Child care and parental leave in the Nordic countries: a model to aspire to? Bonn, Germany: Institute for the Study of Labor.

Ebbinghaus, B., & Manow, P. (Eds.). (2001). *Comparing welfare capitalism: Social policy and political economy in Europe, Japan, and the USA. Ne*w York, NY: Routledge.

Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton, NJ: Princeton University Press.

Esping-Andersen, G. (1999). *Social foundations of postinustrial economies*. Oxford, United Kingdom: Oxford University Press.

Esping-Andersen, G. (2009). *The incomplete revolution: Adapting to women's new roles*. Cambridge, United Kingdom: The Polity Press.

Estevez-Abe, M. (2005). Gender bias in skills and social policies: The varieties of capitalism perspective on sex segregation. *Social Politics*, *12*(2), 180–215. http://doi.org/10.1093/sp/jxi011

Estevez-Abe, M., Iversen, T, & Soskice, D. (2001). Social protection and the formation of skills: A reinterpretation of welfare state. In P. Hall & D. Soskice (Eds.), *Varieties of Capitalism* (pp. 145–183). New York, NY: Oxford University Press.

Evers, M., Mooij, R. D., & Vuuren, D. V. (2008). The wage elasticity of labour supply: A synthesis of empricial estimates. *De Economist*, *156*, 25–43.

Evertsson, M., Grunow, D., & Aisenbrey, S. (2016). Work interruptions and young women's career prospects in Germany, Sweden and the U.S. *Work, Employment, and Society, 30*(2), 291-308.

Frege, C., & Godard, J. (2014). Varieties of capitalism and job quality: The attainment of civic principles at work in the United States and Germany. *American Sociological Review*, *79*(5), 942–965. http://doi.org/10.1177/0003122414548194

Gauthier, A. H. (2002). Family policies in industrialized countries: Is there convergence? *Population (English Edition)*, *57*(3), 447–474. http://doi.org/10.3917/pope.203.0447

Gauthier, A. H. (2011). Comparative family policy database, Version 3 [computer file].

Netherlands Interdisciplinary Demographic Institute and Max Planck Institute for Demographic Research (distributors). Retrieved from: www.demogr.mpg.de

Gislason, I. V., & Eydal, G. B. (2011). Parental leave, childcare and gender equality in the Nordic countries. Nordic Council of Ministers. Retrieved from http://ffdd.ru/activity/attach/information/182/parental_leave_childcare_and_gender_equality_in_the_nordic_countries.pdf

Gornick, J. C., & Meyers, M. K. (2008). Creating gender egalitarian societies: An agenda for reform. *Politics & Society*, *36*(3), 313–349. http://doi.org/10.1177/0032329208320562

Grönlund, A., & Magnusson, C. (2016). Family-friendly policies and women's wages – is there a trade-off? Skill investments, occupational segregation and the gender pay gap in Germany, Sweden and the U.K. *European Societies, 18,* 91-113.

Hacker, J., & Pierson, P. (2010). Winner-Take-All poltics: Public policy, political organization, and the precipitous rise of top income in the United States. *Politics & Society. 38*(2). 152-204.

Haeusermann, S., Picot, G., & Geering, D. (2013). Review article: Rethinking party politics and the welfare state - Recent advances in the literature. *British Journal of Political Science*, *43*, 221–240. http://doi.org/10.1017/S0007123412000336

Hakim, C. (2006). Women, careers, and work-life preferences. *British Journal of Guidance & Counselling*, *34*(3), 279–294. http://doi.org/10.1080/03069880600769118

Hall, P., & Soskice, D. (2001). An introduction to varieties of capitalism. In P. Hall & D. Soskice (Eds.), *Varieties of Capitalism* (pp.1–68). Oxford, United Kingdom and New York, NY: Oxford University Press.

Hicks, A. M. (1994). Introduction to pooling. In T. Janoski & A. M. Hicks (Eds.), *The comparative political economy of the welfare state* (pp. 169-188). Cambridge, United Kingdom: Cambridge University Press.

Hong, I. (2014). Trends and determinants of social expenditure in Korea, Japan and Taiwan. *Social Policy and Administration, 48*(6), 647-665.

Huber, E., & Stephens, J. D. (2000). Partisan governance, women's employment, and the social democratic service state. *American Sociological Review*, *65*(3), 323–42.

Huber, E., & Stephens, J. D. (2001). *Development and crisis of the welfare state*. The University of Chicago Press.

Iversen, T. (2005). *Capitalism, democracy, and welfare*. New York, NY: Cambridge University Press.

Iversen, T., & Rosenbluth, F. (2006). The political economy of gender: Explaining cross-national variation in the gender division of labor and the gender voting gap. *American Journal of Political Science*, *50*(1), 1–19. http://doi.org/10.1111/j.1540-5907.2006.00166.x

Iversen, T., & Soskice, D. (2001). An asset theory of social policy preferences. *American Political Science Review*, *95*(4), 875–893.

Iversen, T., & Soskice, D. (2006). Electoral institutions and the politics of coalitions: Why some democracies redistribute more than others. *American Political Science Review*, *100*(2), 165–181.

Iversen, T., & Stephens, J. D. (2008). Partisan politics, the welfare state, and three worlds of human capital formation. *Comparative Political Studies*, *41*(4–5), 600–637. http://doi.org/10.1177/0010414007313117

Janus, A. L. (2012). The gap between mothers' work-family orientations and employment trajectories in 18 OECD countries. *European Sociological Review, 29*(4)*,* 752–766.

Jaumottes, F. (2003). Labour force participation of women: Empirical evidence on the role of policy and other determinants in OECD countries (OECD Working Paper No. 37) http://www.oecd-ilibrary.org/economics/labour-force-participation-of-women_eco_studies-v2003-art9-en

Judge, G. G., Griffiths, W. E., Hill, R. C., Lutkepohl, H., & Lee, T-C. (1985). *The theory and practice of econometircs* (2nd ed). New York, NY: Wiley.

Kang, J. Y., & Meyers, M. K. (forthcoming). Family policy changes across welfare and production regime, 1990 to 2010. In G. B. Eydal & T. Rostgaard (Eds.). *Handbook of Child and Family Policy*. Cheltenham, United Kingdom: Edward Elgar Publishing.

Klerman, J., & Leibowitz, A. (1997). Labor supply effects of state maternity leave legislation. In F. D. Balu & R. G. Ehrenberg (Eds.), *Gender and Family Issues in the Workplace* (pp. 65–91). New York, NY: Russell Sage Foundation.

Klerman, J., & Leibowitz, A. (2016). Job Continuity among new mothers, *Demography*, *26*(2), 145–155.

Kluve, J., & Tamm, M. (2013). Parental leave regulations, mothers' labor force attachment and fathers' childcare involvement: evidence from a natural experiment. *Journal of Population Economics*, *26*(3), 983–1005. http://doi.org/10.1007/s00148-012-0404-1

Korpi, W. (2006). Power resources and employer-centered approaches in explanation of welfare states and varieties of capitalism - Protagonists, consenters, antogonist. *World Politics, 58(2),* 167-206

Korpi, W., & Palme, J. (2003). New politics and class politics in the context of austerity and globalization: Welfare state regress in 18 countries, 1975-95. *The American Political Science Review, 97*(3), 425-446.

Korpi, W., Ferrarini, T., & Englund, S. (2013). Women's opportunities under different family policy constellations: Gender, class, and inequality tradeoffs in western countries re-examined. *Social Politics*, *20*(1), 1–40. http://doi.org/10.1093/sp/jxs028

Lefebvre, P., & Merrigan, P. (2008). Child-care policy and the labor supply of mothers with

young children: A natural experiment from Canada. *Journal of Labor Economics*, *26*(3), 519–548.

Lein, L., Romich, J. L., & Sherraden, M. (2016). Reversing extreme inequality (Working Paper No. 16). American Academy of Social Work and Social Welfare. Retrieved from: http://aaswsw.org/wp-content/uploads/2016/01/WP16-with-cover-2.pdf

Lundberg, I. (2012). *Gender-differentiated effects of parenthood on earnings: understanding Cross-National Variation in the Motherhood Penalty and Fatherhood Bonus* (LIS Working Paper No. 576). Luxembourg: Luxembourg Income Study.

Mahoney, J., & Thelen, K. (2010). A theory of gradual institutional change. In Mahaoney and Thelen (Eds.), *Explaining institutional change: Ambiguity, agency, and power* (pp. 1-37). Cambridge, United Kingdom: Cambridge University Press.

Mandel, H. (2009). Configurations of gender equality: The consequences of ideology and public policy. *The British Journal of Sociology, 60*(4), 693–719.

Mandel, H., & Semyonov, M. (2005). Family policies, wage structures, and gender gaps : Sources of earnings inequality in 20 countries. *American Sociological Review*, *70*(6), 949–967.

Mandel, H., & Shalev, M. (2006). A welfare state paradox: State interventions and women's employment opportunities in 22 countries. *American Journal of Sociology*, *111*, 1910–49.

Mandel, H., & Shalev, M. (2009a). Gender, class, and varieties of capitalism. *Social Politics*, *16*(2), 161–181. http://doi.org/10.1093/sp/jxp006

Mandel, H., & Shalev, M. (2009b). How welfare states shape the gender pay gap: A theoretical and comparative analysis. *Social Forces*, *87*(4), 1873–1911.

Martin, C. J., & Thelen, K. (2007). Contributions of the public sector to social solidarity in postindustrial societies. *World Politics*, *60*(1), 1–36.

Morgan, K. J. (2005). The "production" of child care: How labor markets shape social policy and vice versa. *Social Politics*, *12*(2), 243–263. http://doi.org/10.1093/sp/jxi013

Nieuwenhuis, R., Need, A., & Kolk, H. V. D. (2012), Institutional and demographic explanations of women's employment in 18 OECD countries, 1975–1999, *Journal of Marriage and Family*, *74*(3), 614–630.

Mukhopadhyay, S. (2012). The effects of the 1978 Pregnancy Discrimination Act on female labor supply. *International Economic Review*, *53*(4), 1133–1153. http://doi.org/10.1111/j.1468-2354.2012.00714.x

Miller, C. F. (1993). Part-time participation over the life cycle among married women who work in the market. *Applied Economics, 25,* 91–99.

North, D. C. (1990). *Institutions, institutional change, and economic performance*. Cambridge United Kingdom: Cambridge University Press.

O'Connor, J. S. (1993). Gender, class and citizenship in the analysis of welfare state regimes : comparative issues theoretical and methodological issues. *The British Journal of Sociology*, *44*(3), 501–518.

O'Connor, J. S., Orloff, A. S., & Shaver, S. (1999). *States, markets, families: Gender, liberalism, and social policy in Australia, Canada, Great Britain, and the United States.* Cambridge, United Kingdom; New York, NY: Cambridge University Press.

OECD. (2016). Gender wage gap (indicator). doi: 10.1787/7cee77aa-en (Accessed on 23 February 2016)

OECD (2016), Gross domestic product (GDP) (indicator). doi: 10.1787/dc2f7aec-en (Accessed on 26 October 2016)

OECD (2016), Unemployment rate (indicator). doi: 10.1787/997c8750-en (Accessed on 26 October 2016)

O'Reilly, J. (2006). Framing comparisons: gendering perspectives on cross-national comparative research on work and welfare. *Work Employment and Society, 20*(4)*,* 731–750.

Orloff, A. S. (2002). *Women's employment and welfare regimes* (Social Policy and Development Programme Paper 12). Switzerland : United Nations Research Institute for Social Development.

Orloff, A. S. (2009). Gendering the comparative analysis of welfare states: An unfinished agenda. *Sociological Theory*, *27*(3), 317–343.

Perry, S. (1988). Downward occupatioanl mobility and part-time women workers. *Applied Economics*, *20*, 485–495.

Pettit, B., & Hook, J. (2005). The structure of women's employment in comparative perspective. *Social Forces*, *84*(2), 779–801. http://doi.org/10.1353/sof.2006.0029

Pierson, P. (2001). Investigating the welfare state at century's end. In P. Pierson (Ed.), *The New Politics of the Welfare State* (pp. 1–14), Oxford, United Kingdom and New York, NY: Oxford University Press.

Podesta, F. (2016). Recent developments in quantitative comparative methodology: The case of pooled time series corss-section analysis. DSS paper SOC 3-02. retreived from: http://docplayer.net/388149-Recent-developments-in-quantitative-comparative-methodology.html

Powell, L. M. (1998). Part-time versus full-time work and child care costs: evidence for married mothers. *Applied Economics*, *30*(4)*,* 503–511.

Raduenbush, A., & Bryk, S. W. (2002). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks: Sage Publications.

Ray, R., Gornick, J. C., & Schmitt, J. (2010). Who cares? assessing generosity and gender equality in parental leave policy designs in 21 countries. *Journal of European Social Policy*,

20(3), 196–216. http://doi.org/10.1177/0958928710364434

Rossin-Slater, M., Ruhm, C. J., & Waldfogel, J. (2013). The Effects of California's Paid Family Leave Program on Mothers' Leave-Taking and Subsequent Labor Market Outcomes. *Journal of Policy Analysis and Management*, *32*(2), 224–245. http://doi.org/10.1002/pam.21676

Rubery, J. (2009). How gendering the varieties of capitalism requires a wider lens. *Social Politics, 16*(2), 192-203.

Rueda, D. (2005). Insider-outsider politics in industrialized democracies: The challenge to social democratic parties. *American Political Science Review*, *99*(1), 61–74.

Rueda, D., & Pontusson, J. (2000). Wage inequality and varieties of capitalism. *World Politics*, *52*(3), 350–383. http://doi.org/10.1353/wp.2000.0011

Schroeder, M. (2009). Integrating welfare and production typologies: How refinements of the varieties of capitalism approach call for a combination of welfare typologies. *Journal of Social Policy*, *38*, 19–43. http://doi.org/10.1017/S0047279408002535

Soskice, D. (2005). Varieties of capitalism and cross-national gender differences. *Social Politics*, *12*(2), 170–179. http://doi.org/10.1093/sp/jxi010

Talyor-Gooby, P. (2004). New risks and social change, In Taylor-Gooby (Ed.), *New Risks, New Welfare* (pp. 1–27). New York, NY: Oxford University Press.

Thévenon, O. (2011). Family policies in OECD countries: a comparative analysis, *Population and Development Review, 37*(1), 57–58. http://doi.org/10.1111/j.1728-4457.2011.00390.x

Tomaskovic-Devey, D., & Skaggs, S. (1999). An establishment-level test of the statistical discrimination hypothesis. *Work and Occupations*, *26*(4), 422–445. http://doi.org/10.1177/0730888499026004003

Tomlinson, J. (2007). Employment regulation, welfare and gender regimes : a co.mparative analysis of women's working-time patterns and work – life balance in the U.K. and the U.S. *The International Journal of Human Resource Management, 18*(3), 401–415. http://doi.org/10.1080/09585190601167466

Visser, J. (2006). Union membership statistics in 24 countries. *Monthly Labor Review, 129*(1), 38-49.

Visser, J. (2016). Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention, and Social Pacts (ICTWSS). Version 5.1. Amsterdam: Amsterdam Institute for Advanced Labor Studies (AIAS), University of Amsterdam.

Webb, J. (2009). Gender and occupation in market economies: Change and restructuring since the 1980s. *Social Politics*, *16*(1), 82–110. http://doi.org/10.1093/sp/jxp003

APPENDICES

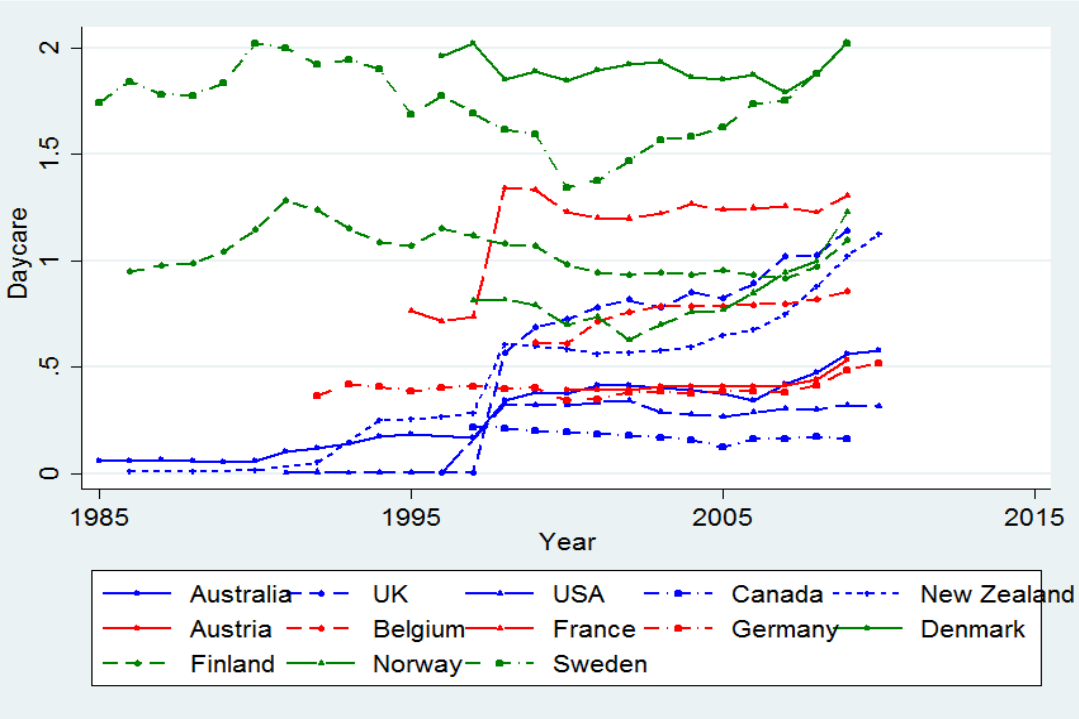
Appendix 2.1.

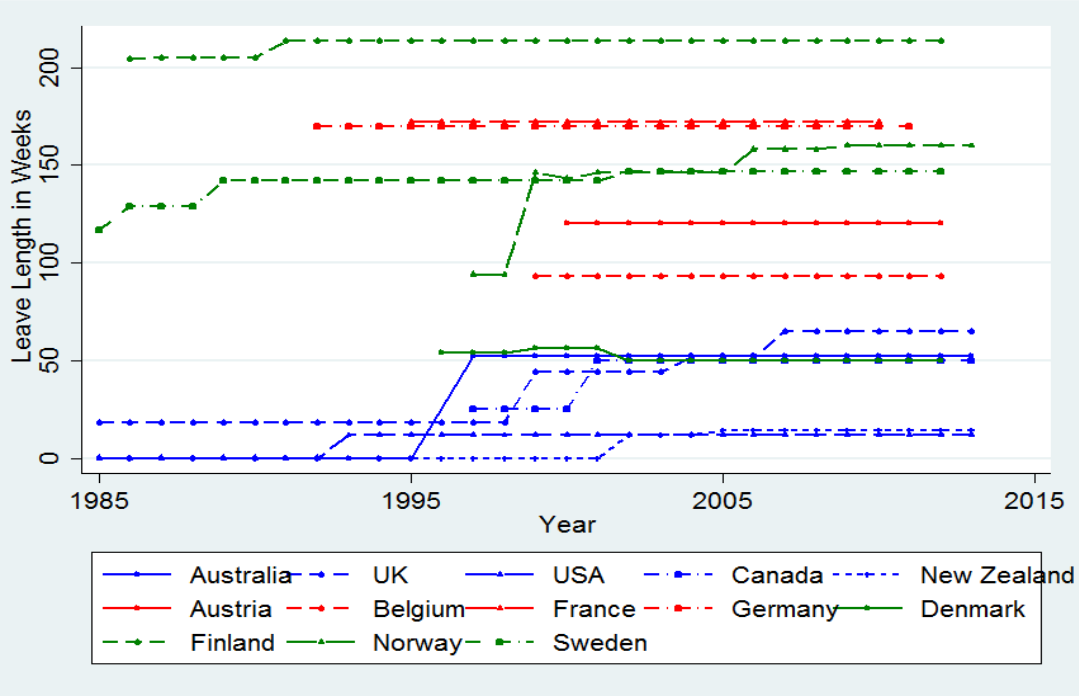
Coefficients from Multilevel Models Estimating the Effect of Skill Profiles and Family Policy on the Gender Wage Gap

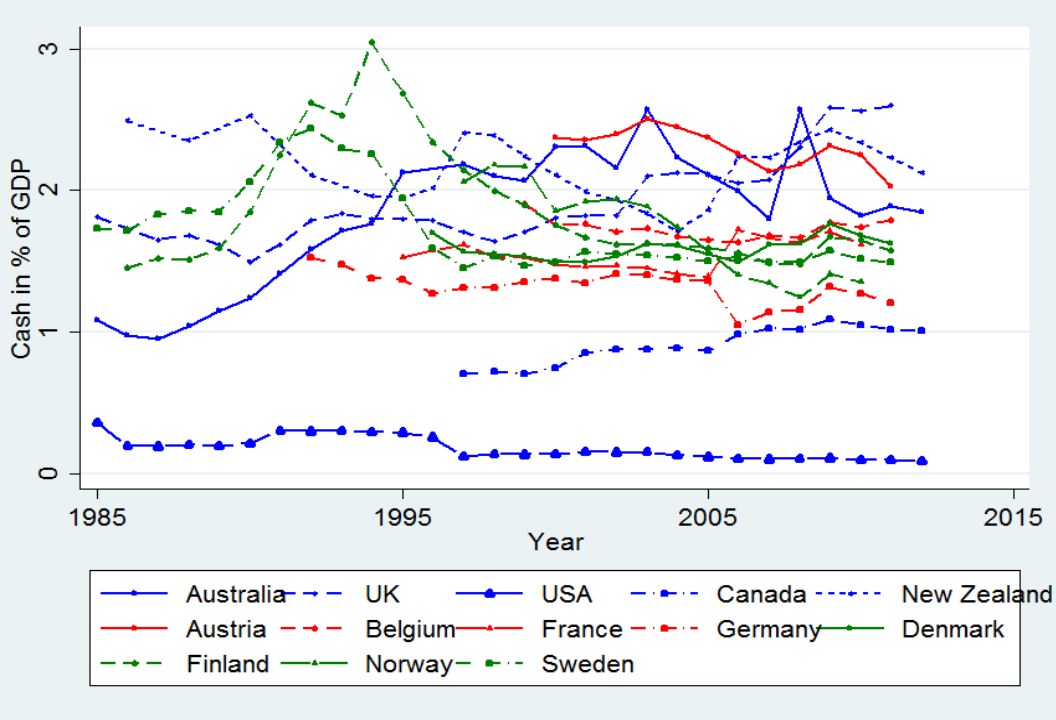
		Individual		Cross-level interaction		Varying effects			
						Childcare		Leave length	
		B	*sig*	*B*	*sig*	*B*	*sig*	*B*	*sig*
Individual-Level Covariates									
Sex (female)		-.815	***	-1.245	***	-.273	***	-.393	***
Age		.043	***	.044	***	.044	***	.044	***
Marital		.084	***	.070	***	.081	***	.081	***
Education (Low)	M	.915	***	.929	***	.912	***	.913	***
	H	1.288	***	1.290	***	1.284	***	1.287	***
Young child presence		.260	***	.026	***	.260	***	.260	***
Other household income		.067	***	.067	***	.067	***	.067	***
Transfer income		-.227	***	-.234	***	-.228	***	-.227	***
Country-Level Covariates and Cross-Level Interaction									
Skill				.137		.113		-.283	
Sex × skill				-.149	***	-.045		.325	
Childcare				.035		.041	***		
Sex × childcare				.029	***	.021	***		
Leave length				.015				.003	
Sex × leave				-.006	***			-.006	***
Leave^2				-.000				-.000	
Sex × leave^2				.000	***			.0.000	**
Skill × leave								.003	
Skill × childcare						.005			
Sex × leave × skill								-.001	***
Sex × childcare × skill						.001			

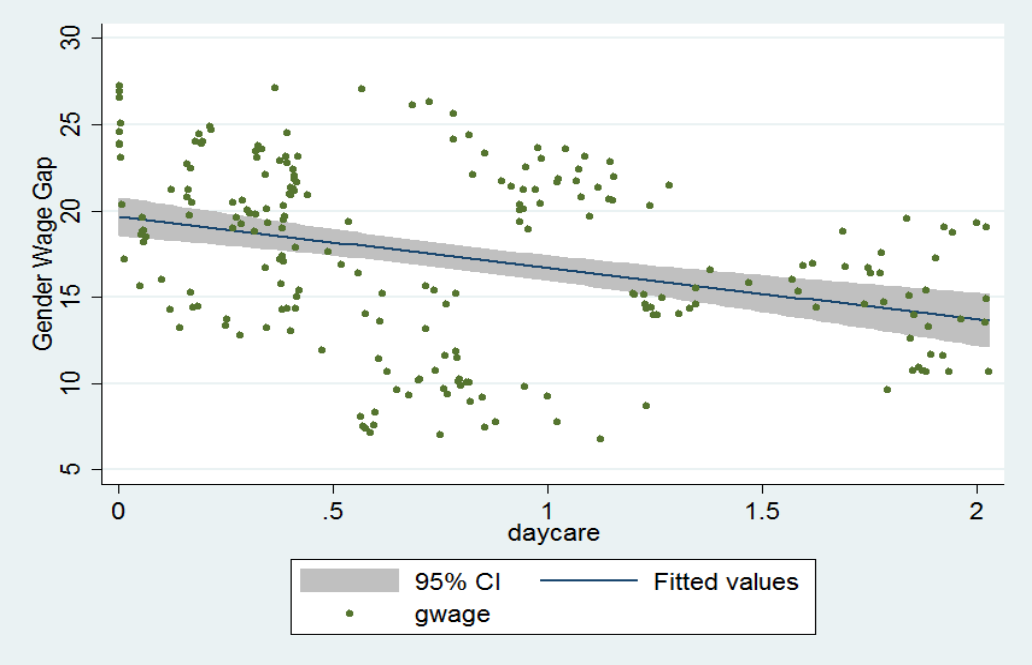
Educational attainment M: medium; H: high; *** p<.01, ** p<0.10, * p<.05; country-level control variables of size of public sector, GDP, tax ratio for second earner, unemployment rate are controlled.

Appendix. 3.1. Daycare, Leave length, and Cash Expenditure in 13 OECD countries (1985–2010)

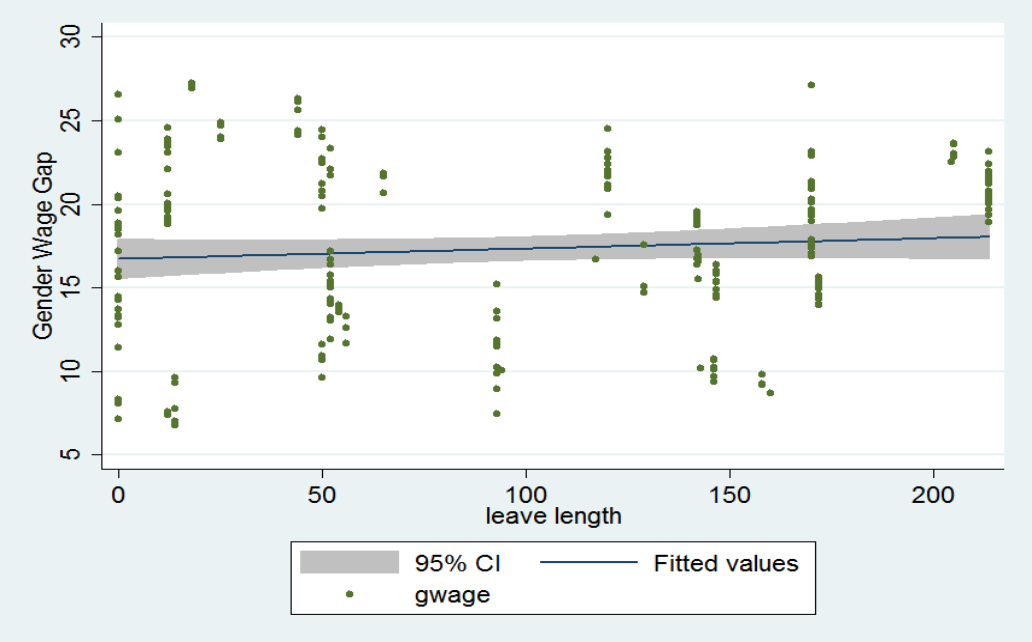




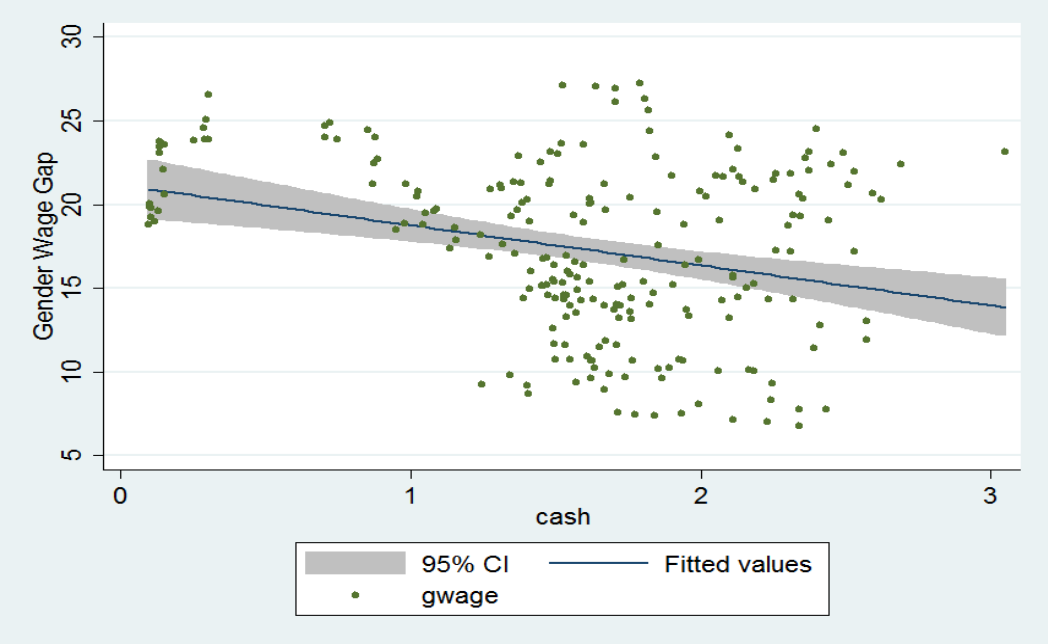

Cash in % of GDP
0
1
2
3
1985
1995
2005
2015
Year
Australia
UK
USA
Canada
New Zealand
Austria
Belgium
France
Germany
Denmark
Finland
Norway
Sweden



Appendix 3.2.1. Scatter Plot for the Association between Daycare and Gender Wage Gap in 13 OECD Countries.



Appendix 3.2.2. Scatter Plot for the Association between Leave Generosity and Gender Wage Gap in 13 OECD Countries.



Appendix 3.2.3. Scatter Plot for the Association between Cash Expenditure and Gender Wage Gap in 13 OECD Countries.

Appendix 3. 2. Scatter Plots for the Association between Daycare, Leave Generosity, and Cash expenditure and Gender Wage Gap in 13 OECD Countries

Appendix 3.3. Correlation Matrix

	Gender wage gap	Leave length	Day care	Cash	Union density	Wage coordination	Unemploy-ment rate	Female labor participation	Left vote	GDP
Gender wage gap	1.0000									
Leave length	.0869	1.0000								
Day care	-.3375	.4255	1.0000							
Cash	-.2856	.2235	.2822	1.0000						
Union density	-.0868	.4081	.6698	.3071	1.0000					
Wage coordination	-.0483	.5397	.2266	.2802	.5329	1.0000				
Unemployment rate	.1768	.2875	-.0915	.0258	.0083	.2201	1.0000			
Female labor participation	-.0389	.6312	.7468	.1004	.6122	.1407	-.1341	1.0000		
Left vote	-.0360	.3971	.3797	.2802	.3833	.4002	.0653	.1800	1.0000	
GDP	-.1788	.0082	.0066	-.2919	-.2058	-.3170	-.3133	.2181	-.3204	1.000

CURRICULUM VITAE

Ji Young (JiYoung) Kang *Curriculum Vitae*

4101 15th Ave NE. **jyk84@uw.edu**
Seattle, WA 98105

EDUCATION

PhD Social Welfare, University of Washington, Seattle, WA June 2017

Dissertation

- Title: Social Policy Contexts, Family Economic Well-being and Gender Equality from a Comparative Perspective
- Committee: Dr. Marcia K. Meyers (Chair), Dr. Jennifer Romich, and Dr. Melissa Martinson
- Concentration in Public Policy and Management, Evans School of Public Policy and Governance 2013
- Statistics Track in the Social Sciences 2014

MSW Social Welfare, Yonsei University, Seoul, South Korea August 2009

- Area of Specialization: Social insurance and social policy

BA Social Welfare, Yonsei University, Seoul, South Korea Feb 2005

- Area of Specialization: Social Welfare
- Exchange program (University of Hawaii, Social Work) 2002-2003

RESEARCH & TEACHING INTERESTS

Poverty and Inequality, Cross-national Comparative Social Welfare Policy, Family Policy, Family and Child Well-being, Children and Poverty, Macro Practice, Research Methods and Evaluation, Policy Analysis

PUBLICATIONS & PRESENTATIONS

Peer-reviewed publications

Lee, J., Romich, J., **Kang, J.Y**., Hook, J., & Marcenko, M. (2017). The Impact of Income on Reunification among Families with Children in Out-of-Home Care. *Children and Youth Services Review, 72,* 91-99.

Kang, J.Y., Romich, J., Hook, J., Lee, J., & Marcenko, M. (2016). Dual-System Families: Cash Assistance Sequences of Households Involved with Child Welfare. *Journal of Public Child Welfare, 10*(4), 352-375.

Park, S., **Kang, J.Y**., & Chadiha, L. (2016). Social Network Types, Health, and Health Care Use Among South Korean Older Adults. *Research on Aging*, 1-24.

Hook, J., Lee, J., Romich, J., Marcenko, M., & **Kang, J.Y**. (2016). Trajectories of Economic Disconnection among Families in the Child Welfare System. *Social Problems, 63*(2), 161-179.

Smith, H., Mienko, J., Chang, Y-L., **Kang, J.Y**., Miyawaki, C., & Schultz, K. (2012). Moving Beyond Dichotomies: How Race, Class and Place Impact High School Graduation Rates for African American Students. *Journal of Sociology & Social* Welfare, 39(1), 17-44.

Shin, H., **Kang, J.Y**., Park, W. & Kim, S. (2009). Health Status and Medical System Utilization of Korean Women in Rural Areas. *Journal of Agriculture Medicine and Community Health, 34*(1), 67-75 (in Korean).

Manuscripts under review and working papers

Kang, J.Y. (second submission). The Effect of Paid Maternity Leave on Welfare Use for Low-income Families. Manuscript submitted to *Journal of Marriage and Family.*

Kang, J.Y., Romich, J., Hook, J., Lee, J., & Marcenko, M (under review). Earnings and Transfer Income among Child Welfare-involved Families. Manuscript submitted to *Social Work Research.*

Kang, J.Y. (under review) Path Dependency or Convergence? Trajectories of Family Policy Changes in 14 OECD Countries across Welfare Regimes (1990-2010). Manuscript submitted to *International Journal of Social Welfare.*

Kang, J.Y., Lee, A. & Kwon, E. (in process). Paid Maternity Leave and Low-income Mothers' Employment Outcomes in U.S. (tentative title).

Kang, J.Y., Hong, I., & Lee, J. (in process). Family Policies, Labor Institutions and Gender attitudes on Female Employment in OECD countries (tentative title).

Book chapters

Kang, J.Y., & Meyers, M. K. (forthcoming). Family policy changes across welfare and production regime, 1990 to 2010 in Guðný Björk Eydal and Tine Rostgaard (eds.). *Handbook of Child and Family Policy*. Cheltenham, UK: Edward Elgar Publishing.

Almgren, G. & **Kang, J.Y.** (2014). Demographics. *Encyclopedia of Social Work*. Washington, D.C.: National Association of Social Workers Press and Oxford University Press.

Dissertation

Social Policy Contexts, Family Economic Well-being and Gender Equality from a Comparative Perspective

Monographs

Kang, J.Y., Meyers, M. K., & Romich, J. (2016). The effect of state-paid maternity leave on TANF and SNAP use by low-income families. Washington State Paid Family Analysis Project: Olympia, Washington State.

Kang, J.Y. (2009). A Study of the Effects of Public Pensions on Retirement for Middle-aged to Elderly Retirees in South Korea by Types of Retirement (in Korean): Master's Thesis.

Kim, J., Lee, S., Park, S., & **Kang, J.Y.** (2008). Policy Tasks for Improving the Social Insurance Scheme for the Elderly in Rural Areas in Korea: Rural Development Administration, Seoul, Korea (in Korean).

Kim, J., Lee, S., Park, S., & **Kang, J.Y.** (2007). Policy Tasks for the Integration of four Korean Social Insurances' Contribution Collective System to Improve Effective Administration and Solve Policy Issues: Ministry of Health and Well-being, Seoul, Korea (in Korean).

Selected Presentations

Invited Professional Presentations

Kang, J.Y., Meyers, M. K., & Romich, J. (October, 2016). *The Effect of Paid Maternity Leave on Welfare Use and its Implication to Washington State.* Washington State Paid Family Leave Advisory Group, Olympia**,** Washington State.

Kang, J.Y. (October, 2016). *The Effect of Paid Maternity Leave on Welfare Use for Low-income Families*. West Coast Poverty Center Seminar Series, West Coast Poverty Center, University of Washington.

Kang, J.Y. (February, 2016). *Economic Well-being of Disadvantaged Families*. Chapin Hall, University of Chicago.

Kang, J.Y. (June, 2009). *A Dynamic Analysis on the Retirement Transition of the Aged: With a Focus on the Effect of Public Pension on Full Retirement and Gradual Retirement*, 2009 Annual National Competition for Korean Retirement and Income Study (Excellence paper award in graduate student session)

Conference Presentations

Kang, J.Y. *The Effect of Paid State Maternity Leave on Public Assistance Use for Low-educated Mothers in the U.S.* Poster presented at the Trainee Seminar for Center for Studies in Demography and Ecology, University of Washington.

Kang, J.Y. *The Danger of a One-sided Story: The Effects of Market Economies and Family Policies on the Gender Employment Gap*. Paper presented at the 2016 Society for the Study of Social Problems (SSSP). Seattle, WA.

Kang, J.Y. *The Effect of Paid State Maternity Leave on Public Assistance Use for Low-educated Mothers in the U.S.* Paper presented at the 2016 Joint World Conference on Social Work, Education and Social Development. Seoul, Korea

Kang, J.Y. *Understanding Trajectories of Family Policy Change in 14 OECD Countries*. Paper presented at the 2015 Society for Social Work and Research (SSWR) 18th Annual Conference, New Orleans, LA.

Romich, J., **Kang, J.Y.**, Hook, J., Lee, J., & Marcenko, M. *Dual-System Families: Cash Assistance Dynamics of Households Involved with Child Welfare*. Paper presented at the 2015 Society of Social Work and Research (SSWR) 18th Annual Conference, New Orleans, LA.

Kang, J.Y. & Meyers, M. *Change or Continuity in Family Policy? Examining Family Policies across 14 Countries from 1990 to 2010*. Paper presented at the 2014 Work and Family Research Network, NY.

Kang, J.Y., Romich, J., Hook, J., Lee, J., & Marcenko, M. *Dual-System Families:*

Cash Assistance Dynamics of Households Involved with Child Welfare. Paper presented at the 2014 Fall Research Conference of the Association of Public Policy and Management (APPAM), Albuquerque, NM.

Kang, J.Y. *Welfare Regime, Production Regime, and Family Policy Restructuring – How have Family Policy Regimes Responded to Social and Economic Changes over Time (1990-2010)?* Poster presented at the 2014 Midwest Political Science Association (MPSA) Conference, Chicago, IL.

Kang, J.Y. *A Cross-National Comparison of the Public Pension Systems of South Korea and Japan: Are the Two Countries Following the Same Path or Diverging?* Paper presented at the 2009 Association for Public Policy Analysis and Management (APPAM) International Conference on Asian Social Protection in Comparative Perspective, Singapore.

Han, C., **Kang, J.Y**., & Song, N. *The Effect of Social Security Programs on Poverty and Income Disparities between Rural Areas and Urban Areas in Korea*. Paper presented at the 2009 Annual Korean Social Security Conference, Seoul, Korea. *co-presenter

Kang, J.Y. *Changing Aspects and Causes of Social Security Policies in Korea: Welfare for Elderly*. Poster presented at the 2008 Social Work World Conference, Salvador, Brazil.

RESEARCH & PROFESSIONAL EXPERIENCES

Research Experience

Economic Disconnected Family Project, *University of Washington* 09/2012-Present
Pre-doctoral research practicum & research associate. Collaborate with Dr. Jennifer Romich. Examine trajectories of benefit experiences of economically disconnected families involved in child welfare. Duties included: manuscript production, data analysis, contributing to research team meetings.

Washington State Paid Family Leave Project, *University of Washington* 12/2015-Present
Collaborate with Dr. Marcia Meyer. Compare the impacts of state paid maternity leave across states on welfare and Supplemental Nutrition Assistance Program (SNAP) use with a focus on paid family leave policy rules (eligibility and benefit levels). Estimate expected effects on Washington State. Duties included: research design, report writing, information dissemination, meetings with WA stakeholders, data analysis.

Family Policies across 14 OECD Countries, *University of Washington* 06/2013-03/2014
Ph.D. Qualifying paper project. Principal Investigator. Conduct research examining family policy changes in cross-national contexts. Use multiple international comparative datasets such as the OECD Family Database (2012), the OECD Social Expenditure data (2012), the Comparative Family Policy database by Gauthier (2011), and EC Childcare Network's report (1996). (Sole author: constructed international comparative indices

from qualitative and quantitative indicators of policy efforts)

Korean Institute for Health and Social Affairs, *Seoul, Korea* 12/2008-02/2009
Research Intern. Trained in the methodology of analysis for poverty and inequality. Basic research on the Korean National Basic Livelihood Security System (NBLSS).

Korean National Pension Research Institute, *Seoul, Korea* 07/2008-08/2009
Research Intern. Conducted research on a comparative study of pension re form in European countries.

Social Welfare Research Institute, *Yonsei University, Korea* 09/2007-08/2008
Research Assistant. Participated in a research project on the plan for integr ation of the contribution system for the four Korean social insurance progr ams and research on policy issues for implementing the social security sys tem for farmers.

Professional Working Experience

Economic Opportunity Institute (EOI), *Seattle*, externship 09/2013-08/2014
Policy analysis for the potential effects of the introduction of paid maternity leave in Washington State and information dissemination through policy brief and research report, coalition meeting, meeting with stakeholders during the WA legislative session. Supervised by Dr. Marilyn Watkins.

National Assembly of the Republic of Korea, Policy Staff (temporary fixed-term) 07/2011-08/2011
Work for Congresswoman Myung Soon Kang. Research on family supporting policies in UK, France and U.S. Arranged the international symposium for family and child well-being

National Assembly of the Republic of Korea, Policy Staff

Duties included: policy analysis, research, information dissemination through publication, public hearings, and press releases on proposed policy bills on social policy including poverty alleviation, national pension system, and family policy as supporting activities for Congresswoman Kyung Hwa Ko 05/2005-02/2007

TEACHING EXPERIENCE AND SERVICE

Teaching Experience

Poverty and Inequality, Sole Instructor (MSW course) 2017

Advanced Social Welfare Research and Evaluation, Sole Instructor (MSW course) 2016

Macro Practice I, Teaching Practicum

MSW level. Duties included: classroom activities, lectures, attendance at instructors' weekly meetings 2014

Health Care Policy/service: Inequality and Development, Teaching Practicum 2012

MSW level. Duties included: lectures, class designs, leading student discussions

Pension policy in Korea, Teaching Assistant, Yonsei University, Korea 2008

Joint seminar with the Graduate School of Law at Seoul National University. Master's level. Duties included: preparation for presentations, leading student discussions

Service

Moderator, UW interdisciplinary talk on labor, Working Together for Labor Justice, Spring 2014 Panel Discussion Series, School of Social Work, University of Washington 2014

Students Speaker Series Planning committee, University of Washington 02/2014-06/2014

Social Work Labor Series Planning, University of Washington 03/2014-06/2014

Journal Review

Family relations (2016-7)

AWARDS, FELLOWSHIP & TRAINEESHIP

Honors and fellowship

Center for Social Science and Statistics travel grant, University of Washington 2016

Social Policy Research Fellowship, West Coast Poverty Center, University of Washington 2012-2014

Graduate School Fund for Excellence and Innovation (GSFEI), University of Washington 2010- 2012

Travel Award, Work and Family Researcher Network	2014
Travel Award, Fragile Families and Children Workshop	2014
Travel grant for research and conferences, University of Washington	2011-2016
Excellence Award, Annual National Competition for Korean Retirement and Income Study, Korea	2009
Brain Korea 21 Scholarship, Korea	2007-2009
Honor student, Yonsei University, Korea	2002

Traineeship

Statistics Track in the Social Welfare Ph.D. Program, Center for Statistics and the Social Sciences, University of Washington	2014
Ph.D. Concentration in Public Policy and Management, Evans School of Public Affairs, University of Washington	2013
Luxembourg Income Study Summer Workshop, Luxembourg	2013
Fragile Families and Child Well-being Summer Workshop, NY	2014