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### The Danger of a One-sided Story: The Effects of Production Regimes and Family Policies on the Gender Employment Gap

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The Danger of a One-sided Story: The Effects of Production Regimes and Family  
Policies on the Gender Employment Gap

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Abstract

Despite growing interest in the effects of variations in work and family reconciliation policies on female employment across countries, the questions in what way and to what extent production regimes influence female employment provide an important backdrop to the current research. Drawing on Varieties of Capitalism (VoC) literature, I examine the effects of production regimes and work and family reconciliation policies on the gender employment gap simultaneously in 15 Organization for Economic Co-operation and Development (OECD) countries using the Luxembourg Income Study (LIS).

Childcare is associated with a lesser degree of gender gap in employment participation and leave generosity has a curvilinear relation with the gender employment gap. Whereas the coordinated market economies themselves are associated with smaller gender gaps in employment participation, in the coordinated market economies leave generosity produces a higher gender employment gap than in the liberal market economies. This research highlights the importance of production regimes in understanding female employment and the interactive effects of leave generosity by production regimes.

Keywords: Gender employment gap, Varieties of Capitalism (VoC), production regimes, work and family reconciliation policies (leave generosity, public childcare)

Persistent cross-national variations in the gender employment gap exist despite the trend across many affluent countries demonstrating that women have increasingly participated in labour 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 et al., 2008) and are more influenced by various life events such as childbirth or marriage (Blundell and McCurdy, 1999). A great deal of previous research has pointed to the importance of welfare state institutions and the role of family policies (Gornick and Meyers, 2008; Pettit and Hook, 2005; Korpi et al., 2013; Orloff, 2009; O'Connor, 1993; O'Connor et al., 1999; Mandel and Shalev, 2006) and labour market institutions (Blau and Kahn, 2003) as factors that influence female employment. In particular, strong family policies enable mothers to deal with the dual responsibilities of work and childcare, thereby increasing female labour participation (Budig et al., 2010; Mandel and Semyonov, 2005; Pettit and 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 female employment (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 labour markets, and employment patterns are often contingent on the labour market conditions and market contexts (Pierson, 2001). My argument is that the

contexts of production regimes influence the gender employment gap and moderate the effects of family policy on the gender employment gap. Thus, bringing the VoC perspective helps us advance our understanding of cross-national differences in the gender employment gap, and further failure to account for the production regime may carry the risk of inaccurately estimating the effects of family policy.

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. It disentangles the net effect of family policies and the interactive role of production regime with family policy on the gender employment gap. Findings indicate that childcare and parental leave generosity significantly decrease the gender employment gap after accounting for the effects of production regimes and that firm-specific skill is associated with less gender employment gap. However, a higher gender employment gap at the same level of leave generosity in the coordinated market economies than in liberal market economies suggests that coordinated market economies (CMEs) can be more gender biased than liberal market economies (LMEs) in terms of their interaction with family policy, in particular, leave generosity.

### **The effect of childcare and leave policies related to maternity and childcare**

Childcare and leave generosity 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 labour supply. Mothers are

assumed to maximize their utilities over labour supply based on preferences, 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 labour supply.

Women's decisions about leave are based on the calculation of a reservation wage (Baker et al., 2008; Klerman and 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. 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 et al., 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 and 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 defamilising/familising. The intent of childcare is to commodify the labour of

mothers with young children (Janus, 2012) by defamilising the childcare. However, contrary to this, guaranteed time-off provided by leave in essence leads women to stay home and familise 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 et al., 2012; Petit and 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 labour 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 labour market (Gornick and Meyers, 2008; Pettit and Hook, 2009). Childcare increases the female labour 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 and 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 and 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 and Kimmel, 2003). I hypothesize, based on previous literature, that childcare is negatively associated with the gender employment gap because it increases female employment participation.

*Hypothesis 1. 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 labour force attachment and career progress after childbirth by guaranteeing job security during their leave time (Gornick and Meyers, 2008; Kluge and Tamm, 2013; Pettit and Hook, 2005). Nonetheless, extensive maternal/parental leave has a negative impact on female employment (Petit and Hook, 2005). It is possible that extensively long parental leave may induce many female workers to exit the labour 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. Based on the



previous literature, I expect that the effect of labour 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 2. Leave generosity has a curvilinear relation with the gender employment gap such that parental leave decreases the gender employment gap up to a certain point and then extensively long parental leave increases the gender employment gap.*

### **Influence of production regimes on the gender employment gap**

The emerging VoC framework has implications for understanding systematic institutional market contexts relevant to female employment and suggests that production regimes may play a role in shaping female employment. It introduces the diversity of capitalist market economies and contrasts two types of market economies: LMEs with apparently limited state involvement in labour contracts and market regulation, and 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 and Soskice, 2001) but also gendered divisions of work and female labour 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 et al., 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. This situation puts female workers in unfavourable conditions (less attractive to employers) because female workers are likely to demand more social protection than male workers and to experience career breaks around childbirth or caring responsibilities.

From the female workers' perspective, investment in firm-specific skills may be unfruitful. Female workers know that they are likely to leave the labour 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 labour 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 labour 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 3. 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 varying effects of childcare and leave policies by production regimes**

The VOC argument can be extended to the interaction between production regimes and family policies (Estevez-Abe, 2006). In other words, it raises a question of whether and how different production regimes contextualize the influence of family policies on the gender employment gap. Nonetheless, it is largely unknown and unexplored if social policies have varying effects across countries by different institutional contexts and political configurations (Frege and Godard, 2014; Pierson, 2001; Rueda and Pontusson, 2000), in particular production regimes.

According to the VoC framework, CMEs with higher levels of female employment protections, parental and maternity leave policies are likely to experience much stronger gender-specific discrimination mechanisms and negative implications on female employment than LMEs (Estevez-Abe, 2005). Time off work by parental and maternity leave creates delays in skill acquisition for female workers and places a burden on employers with costs for hiring replacement workers or for allocation of the work to existing employees. On the contrary, childcare provision enables female workers to continue to acquire firm-specific skill. Thus, it is not necessary to expect that childcare provisions produce higher gender discrimination in CMEs than LMEs. As the direction of interaction between production regimes and childcare provision is not clear, I do not

provide any hypothesis for the influence of childcare on gender employment gap according to production regimes.

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

## **Methods**

### **Data**

Luxembourg Income Study (LIS) is used for the analysis. LIS presents cross-nationally harmonized and nationally representative individual-level datasets. For country-level indicators, several datasets are combined to capture country-level variations:

Comparative Welfare State dataset (Brady et al., 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 labour market behaviours 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.

### Analytic model

I used a random intercept multilevel logistic model in estimating employment outcome. Multilevel analysis (Boeckmann et al., 2013; Pettit and Hook, 2005; Raduenbush and 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.

Two different sets of models separately examine the independent effects of family policy and production regimes and the interaction between family policy and production regimes on the gender employment gap.

Specifically, the first model is expressed as follows:

$$\begin{aligned} \log\left(\frac{p_{emp_{ij}}}{1 - p_{emp_{ij}}}\right) \\ = \beta_{0j} + \beta_1 X_{1ij} + \beta_2 Family\ policy_{ij} + \beta_3 Skill_{ij} \\ + \beta_4 Gender_{ij} \times Family\ policy_{ij} + \beta_5 Gender_{ij} \times Skill_{ij} + Z_{1ij} \\ + R_{ij} \end{aligned}$$

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

The dependent variable is the log-odds of employment for individual  $i$  in country  $j$ .  $\beta_{0j}$  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  $\beta_1$  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.

$Z_{1ij}$  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).  $\beta_3Gender_{ij} \times (Family\ policy_{ij}\ or\ Skill_{ij})$  are the vectors of interaction between gender and country-level independent variable, gendered effect of market economies and work and family reconciliation policies. This analysis gauges the degrees to which institutions such as market economies (skill profile), leave policies and childcare have differential effects by gender.

In the second model, I assume the interaction between skill profiles and family policies that jointly influence the logistic regression of the employment outcome; especially, skill profiles may influence the strength of effects of family policies on employment.

$$\begin{aligned} \log\left(\frac{p_{emp_{ij}}}{1 - p_{emp_{ij}}}\right) &= \beta_{0j} + \beta_1 X_{1ij} + \beta_2 Family\ policy_{ij} + \beta_3 Skill_{ij} \\ &+ \beta_4 Gender_{ij} \times Skill_{ij} + \beta_5 Gender_{ij} \times Family\ policy_{ij} \\ &+ \beta_6 Skill_{ij} \times Family\ policy_{ij} \\ &+ \beta_7 Gender_{ij} \times Skill_{ij} \times Family\ policy_{ij} + Z_{1ij} + R_{ij} \\ \beta_{0j} &= \gamma_{00} + U_{0j} \end{aligned}$$

In order to examine varying effects of family policies by production regimes 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 Labour 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 production regime. 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 linked to the coordinated market economies, whereas a lower score indicates that a country is likely to rely on more general skill formation linked to liberal market economies.

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 and Rosenbluth, 2006).

Another indicator, firm tenure, is measured by the distribution of employer tenure (Iversen and Rosenbluth, 2006). 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 labour and market structures, firm tenure rates tend to be longer for workers with highly specific skills.

### *Childcare*

I used childcare expenditure to measure state commitment to childcare. Childcare expenditure (percentage of GDP) is adjusted by population of children under age 3 (percentage of the total population). Childcare expenditure rather than enrolment in public childcare facilities is more useful to gauge state efforts relating to childcare. This is because the enrolment could also be interpreted as policy outcome combined with individuals' decisions rather than as policy efforts, and numbers of children in publicly funded daycare facilities are endogenous with female 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 labour participation. In order to account for the curvilinear relation, squared leave length is also added to the analysis.

### *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 and Rosenbluth, 2006; Mandel and Shalev, 2006) and for an interactive effect of women's labour force participation and public sector delivery (Huber and 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 (Jaumottes, 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.

#### *Individual and household variables*

Several individual and household characteristics are included in the main models following standard labour supply models as well as human capital theory (Boeckmann et al., 2013; Budig and England, 2001; Lundberg, 2012; Blau and Kahn, 2001). Family circumstances can be determinants of female labour supply. In order to account for the fact that other sources of family income from a spouse or other members may decrease the likelihood of female employment, the amount of transfer income and income from other household members is 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. As another important determinant of female employment decisions (Becker, 1991), 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. Sample sizes, summary statistics of variables of interest (country-level) and individual variables in each country are presented in Table 1.

### **Patterns of the gender employment gap across countries**

Figure 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 that in Nordic countries (Sweden, Norway and Finland); this finding contrasts with previous research

showing that continental welfare states tend to have lower levels of female employment than Nordic countries (Orloff, 2002).

The ranking of the gender employment gap across countries does not map onto that of the female employment rate. Gender differences in employment participation in Figure 1-2 vary from 2.6 percentage points in Denmark to 17.4 percentage points in Austria, where female employment rate 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 the gender employment gap is lower than in Norway and Sweden.

### **Gender difference in predicted employment probabilities**

Figure 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 production regimes 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 generosity and daycare), setting all other variables at means across all the groups from the multilevel logistic regression

models. In other words, the gender employment gap is estimated by calculating the difference between the employment rate between male and female at each level of variable of interest and at means of other control variables.

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.

Childcare provision decreases the gender gap probability of being employed, suggesting a positive impact on female employment (Figure 2). This finding not only supports hypothesis 1 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). 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 favourable to female employment. This finding contrasts with hypothesis 3, which states that strong reliance on specific skills for each country (more coordinated) would harm female employment relative to male employment and thus increase the gender employment gap.

### **Varying effects of parental leave generosity and daycare by production regimes**

Figure 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 confidence 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.

For any case, leave generosity is significantly 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), this interaction 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 3). 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 are crucial for understanding these patterns. The present study has implications for the current literature, which has few empirical studies examining the role of production regimes on female employment. Bringing production regimes 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 production regimes.

The findings about the net effect of childcare and parental leave mean that the influence of production regimes does not hinder the unique and significant influence of childcare and parental leave generosity on the gender employment gap. Childcare and parental leave generosity significantly decrease the gender employment gap after accounting for the effects of production regimes. 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, a period longer than 210 weeks of parental leave does not have significant impact on decreasing the gender employment gap, suggesting that extensively long leave policies are likely mechanisms that mediate female labour market participation with human capital depreciation.

Production regimes have substantial impact on female employment but the direction of the influence of market economies on the gender employment gap is complex. Whereas I hypothesized that CME countries with higher levels of firm-specific skills 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 interaction model between production regimes and family policies, the gender employment gap is larger in CMEs than in LMEs, given the same level of leave generosity. In other words, CMEs can be more gender biased than LMEs in terms of their interaction with leave generosity (Estevez-Abe, 2005). 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.

On the contrary, no interactive effect between childcare and production regimes confirms different policy assumptions of family leave and childcare (Estevez-Abe, 2005; Janus, 2012). There may be a more negative effect of leave generosity than childcare on female employment in the CMEs (Estevez-Abe, 2005) due to potentially 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. It is possible that in the CMEs, which 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 labour status and human capital development. This finding, that is, a varying effect of production regimes in relation with family policy on the gender employment gap but a positive impact on the gender employment gap, calls for future study investigating the interaction between family policy and production regimes. The effect of family policy in reducing the gender employment gap may not be universal across countries but can be varied by production regime and by types of family policies.

In fact, despite its insights, the VoC framework may not be sufficient to capture the differences in family policies and female employment consequences within CMEs. Empirical studies support the distinctiveness of family policies in the CMEs, differentiating social democratic welfare state regimes and those that have conservative regimes within CMEs (Gauthier, 2002; Gornick and Meyers, 2008; Korpi et al., 2013; Thevenon, 2011). These family policy variations (Mandel and Shalev, 2009; Webb,

2009) among CMEs are overlooked, instead treating all CMEs as a single variety of capitalism (Estevez-Abe, 2005; Hall and Soskice, 2001). Countries with the CMEs that invest in firm-specific skills can take two distinctive approaches to social and work and family reconciliation policies, observed in the difference between those with social democratic and those with conservative welfare state regimes. In conservative welfare regimes, social policies favour male workers as primary breadwinners with the assumption that female workers will exit the labour market after marriage and childbirth. Social democratic welfare regimes provide strong job protection for female workers around their career breaks, allowing them to continue skill formation and career development. This suggests that among CMEs, there may be different consequences for family policy approaches, for example, more active protection of work and family reconciliation in Nordic countries or discouragement of female labour participation in continental European countries. Future study could explore and elaborate these different family policy consequences within similar market economies and their interactive effects of family policies on female employment by different production regimes.

### References

- Baker M, Gruber J, Milligan K, Journal S, August N and Baker M (2008) Universal child care, maternal labor supply, and family well-being. *Journal of Political Economy* 116(4): 709–745.
- Becker GS (1965) A theory of the allocation of time. *Economic Journal* 75: 493–517.
- Blau FD and Kahn LM (2003) Understanding international differences in the gender pay gap. *Journal of Labour Economics* 21(1): 106–144.
- Blundell R and MaCurdy TE (1999) Labor supply: A review of alternative approaches. In:

- Ashenfelter O and Card D (eds) *Handbook of Labor Economics*, Vol. 3 (pp. 1559–1696). Amsterdam: Elsevier Science.
- Boeckman I, Misra J and Budig M (2015) Cultural and institutional factors shaping mother employment and working hours in postindustrial countries. *Social Forces* 93(4): 1301–1333.
- Raduenbush A and Bryk SW (2002) *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks: Sage Publications.
- Brady D, Huber E and Stephens JD (2014) Comparative welfare states data set. University of North Carolina and WZB Berlin Social Science Center.
- Budig MJ and England P (2001) The wage penalty for motherhood. *American Sociological Review* 66(2): 204–225.
- Budig MJ, Misra J and 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 and Washbrook E (2008) Maternity rights and mothers' return to work. *Labour Economics* 15(2): 168–201.
- Connelly R (1992) The effect of child care costs on married women's labour force participation. *Review of Economics and Statistics* 74(1): 83–90.
- Connelly R and Kimmel J (2003) Marital status and full-time / part-time work status in child care choices. *Applied Economics* 35(7): 761–777.
- 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.

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

Evers M, Mooij RD and Vuuren DV (2008) The wage elasticity of labour supply: A synthesis of empirical estimates. *De Economist* 156: 25–43.

Gauthier AH (2002) Family policies in industrialized countries: Is there convergence? *Population* (English edition) 57(3): 447–474.

Gauthier AH (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](http://www.demogr.mpg.de)

Gislason IV and Eydal GB (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](http://ffdd.ru/activity/attach/information/182/parental_leave_childcare_and_gender_equality_in_the_nordic_countries.pdf)

Gornick JC and Meyers MK (2008) Creating gender egalitarian societies: An agenda for reform. *Politics and Society* 36(3): 313–349.

Hakim C (2006) Women, careers, and work-life preferences. *British Journal of Guidance and Counselling* 34(3): 279–294.

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

Huber E and Stephens JD (2000) Partisan governance, women's employment, and the

social democratic service state. *American Sociological Review* 65(3): 323–342.

Iversen T and 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.

Janus AL (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](http://www.oecd-ilibrary.org/economics/labour-force-participation-of-women_eco_studies-v2003-art9-en)

Kang JY and Meyers MK (forthcoming). Family policy changes across welfare and production regime, 1990 to 2010. In: Eydal GB and Rostgaard T (eds) *Handbook of Child and Family Policy*. Cheltenham, United Kingdom: Edward Elgar Publishing.

Klerman J and Leibowitz A (1997) Labor supply effects of state maternity leave legislation. In: Balu FD and Ehrenberg RG (eds) *Gender and Family Issues in the Workplace*. New York: Russell Sage Foundation, pp.65–91.

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

Kluve J and 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.

Korpi W, Ferrarini T and 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.

Lefebvre P and 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.

Luxembourg Income Study (LIS) Database, <http://www.lisdatacenter.org> (multiple countries; {March 2016 to April 2017 }). Luxembourg: LIS.

Mandel H and Shalev M (2006) A welfare state paradox: State interventions and women's employment opportunities in 22 countries. *American Journal of Sociology* 111: 1910–1949.

Mandel H and Shalev M (2009) Gender, class, and varieties of capitalism. *Social Politics* 16(2): 161–181.

Mukhopadhyay S (2012) The effects of the 1978 Pregnancy Discrimination Act on female labor supply. *International Economic Review* 53(4): 1133–1153.

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

O'Connor JS (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 JS, Orloff AS and Shaver S (1999) *States, markets, families: Gender, liberalism, and social policy in Australia, Canada, Great Britain, and the United*

*States*. Cambridge and New York: 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 AS (2002) *Women's employment and welfare regimes* (Social Policy and  
Development Programme Paper 12). Switzerland : United Nations Research Institute  
for Social Development.

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

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

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

Pettit B and Hook J (2005) The structure of women's employment in comparative  
perspective. *Social Forces* 84(2): 779–801.

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

Ray R, Gornick JC and 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.

Rossin-Slater, M, Ruhm CJ and 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.

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.

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.

Webb J.(2009) Gender and occupation in market economies: Change and restructuring since the 1980s. *Social Politics* 16(1): 82–110.



Table 1.  
*Individual Variables and Country-level Variables by Countries (2009)*

Country	Sample (25, 45)	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	19,093	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	6,489	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	6,738	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	84,767	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	10,263	35.9 (6.1)	56.3	10.6	44.7	44.7	35.9	7.21 (3.39)	6.80 (4.71)	.84	213.4	19.6
France	18,566	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	11,591	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	6,776	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	4,765	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	11,700	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	239,090	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	17,167	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

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Sweden	11,470	35.5 (5.9)	43.1	10.2	57.1	36.2	23.6	7.19 (3.59)	5.96 (4.81)	.98	146.6	27.0
United Kingdom	25,959	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	99,550	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

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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.

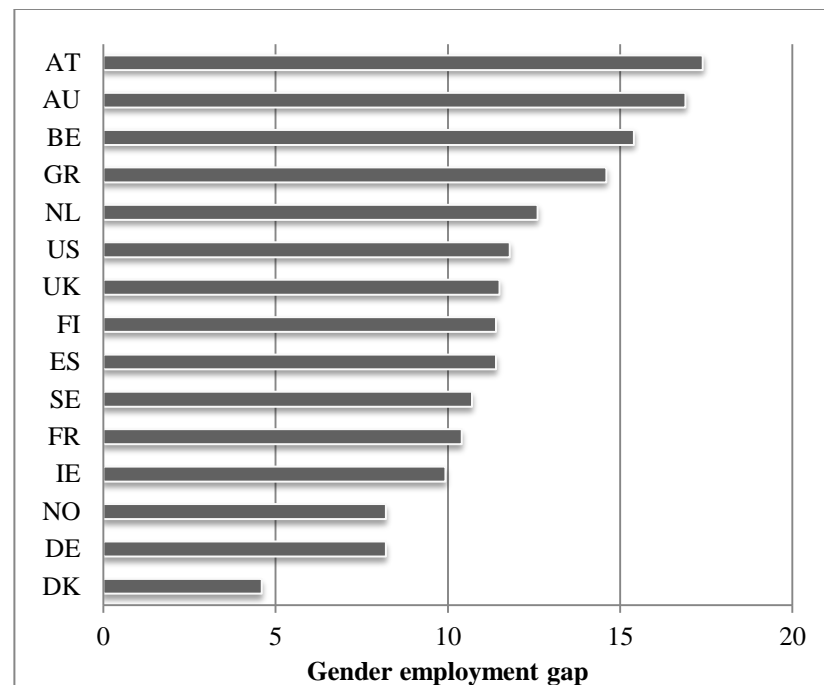
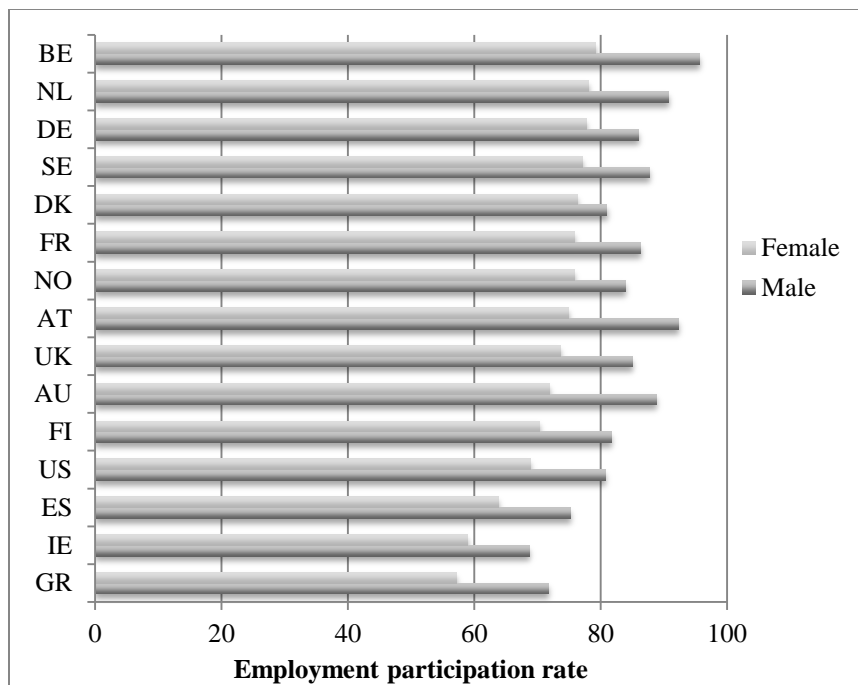


Figure 1-2. Ranked employment participation by gender and countries

Figure 1-2. Ranked gender employment gap by countries

Figure 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

Production regimes, family policy and gender employment gap

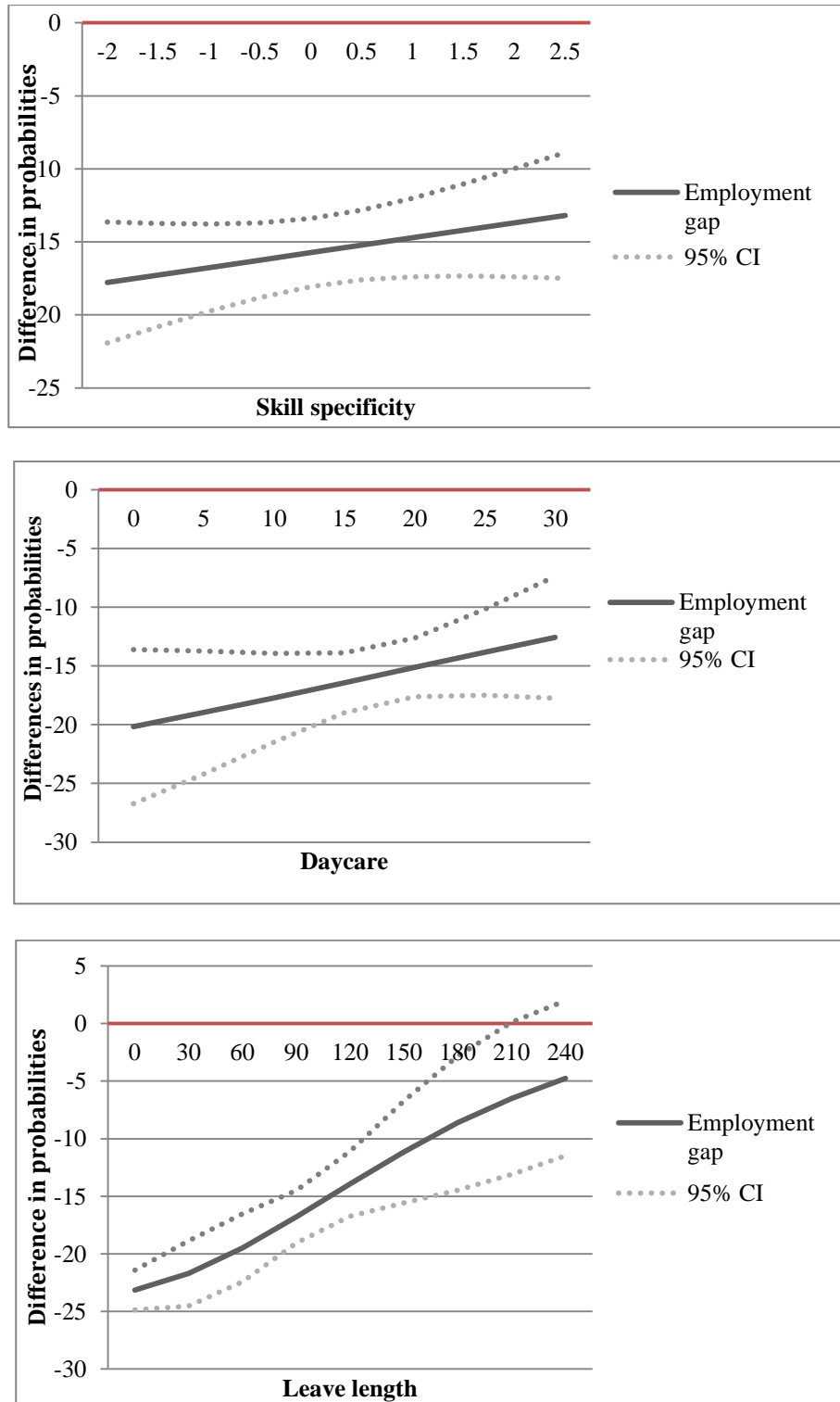


Figure 2. The Effects of Institutional Contexts on the Gender Employment Gap

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.

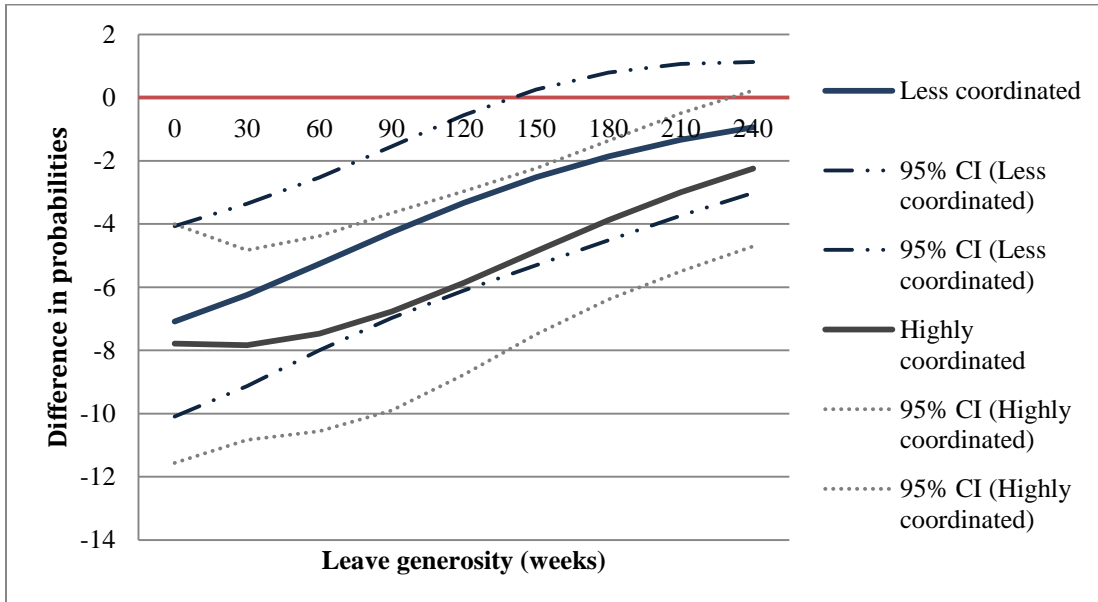


Figure 3. The Effect of Leave Generosity Moderated by Skill Profile

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).

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.

## Appendix. Coefficients for multilevel logistic regression on employment

	Individual		Cross-level interaction		Varying effects				
	<i>B</i>	<i>sig</i>	<i>B</i>	<i>sig</i>	Childcare		Leave length		
					<i>B</i>	<i>sig</i>	<i>B</i>	<i>sig</i>	
<b>Individual-Level Covariates</b>									
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	***	
<b>Country-Level Covariates and Cross-Level Interaction</b>									
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 <sup>2</sup>			-.000	***			-.000	**	
Sex × leave <sup>2</sup>			.000	***			.000	**	
Skill × leave							.003		
Skill × childcare					.005				
Sex × leave × skill							-.001	***	
Sex × childcare × skill					.001				

Other household income and transfer income are log-transformed.