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Institutional and Demographic Explanations of Women's Employment in 18 OECD Countries, 1975 – 1999

This study combined demographic and institutional explanations of women's employment, describing and explaining the degree to which mothers in industrialized societies are less likely to be employed than women without children. A large number of cross-sectional surveys were pooled, covering 18 Organisation for Economic Co-Operation and Development countries, 192,484 observations, and 305 country-years between 1975 and 1999. These data were merged with measures of institutional context and analyzed with multilevel logistic regression. The results indicate that, over time, women were increasingly likely to combine motherhood and employment in many, but not all, countries. Both mothers and women without children were more likely to be employed in societies with a large service sector and low unemployment. The employment of women without children was generally unaffected by family policies. Mothers were more likely to be employed in societies with extensive reconciliation policies and limited family allowances.

Industrialized societies witnessed a marked rise in women's employment during the last decades

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of the 20th century. This upward trend has been documented in a substantial literature, which puts forward two key explanations. One of these focuses on the micro level and emphasizes women's shifting demographics, such as motherhood, marital status, and educational level; the other highlights the macro level and centers on the changing institutional characteristics of societies, such as family-related policies and labor market structure (Del Boca & Locatelli, 2006; Jaumotte, 2004; Van der Lippe & Van Dijk, 2002). Various authors have suggested integrating these two strands of explanation (Pettit & Hook, 2005; Van der Lippe & Van Dijk).

Studies of demographic explanations of women's employment have established the influence of factors such as motherhood, marriage, education, and birth cohort on the returns, motives, and costs associated with women's participation in the labor force (Becker, 1991; Bernhardt, 1993; Brewster & Rindfuss, 2000; Cramer, 1980; Stycos & Weller, 1967). At the same time, the rising employment of women in industrialized countries has been accompanied by demographic shifts such as declining fertility, declining marriage rates, and educational expansion (England & Farkas, 1986; Goldin, 1990; Pettit & Hook, 2005).

Of the demographic factors, the presence of children in the household was found to be the most important in explaining whether a woman is employed (Van der Lippe & Van Dijk, 2002). Nonetheless, the negative association between motherhood and women's employment

cannot be interpreted simply as a causal effect of having children. Micro-level studies have found not only that mothers are more likely to abstain from employment but also that employed women tend to limit their fertility (Bernhardt, 1993; Cramer, 1980; Waite & Stolzenberg, 1976). Notwithstanding this recursive relation, the negative association between fertility and employment varies between countries and within countries over time.

Institutional explanations of women's employment state that over time it has become easier for women to combine motherhood with employment because of the introduction of institutional arrangements such as maternity leave, pay during maternity leave, and child-care leave (Del Boca & Locatelli, 2006; Esping-Andersen, 1999; Rindfuss & Brewster 1996). Financial support policies to families, such as family allowances and tax benefits to families, conversely, are argued to decrease the employment of women. In addition, the evolving structure of the labor market in the late 20th century has increasingly provided attractive options for women to enter employment. Women are especially likely to be employed in countries with a large supply of jobs in the service sector, high female wages (Ahn & Mira, 2002; Brewster & Rindfuss, 2000; Del Boca & Locatelli), and low unemployment.

The literature on women's employment by and large has tested the demographic and institutional explanations separately, to the point that the debate on the topic has been referred to as polarized (Pettit & Hook, 2005, p. 780). This polarization, alongside a number of other factors, limits previous studies in at least four ways.

First, micro-level studies of women's employment have tended to cover only a small number of countries or a short period of time, though providing great detail on which demographic factors influence a woman's likelihood of participating in paid employment (Matysiak & Vignoli, 2008). The specificity of the various studies in regard to time and place makes it difficult to discern changes across multiple countries and over longer time periods in the negative association between motherhood and women's employment.

Second, macro-level studies on the effects of institutional arrangements on women's employment have often used aggregate measures of women's employment, that is, measures that

refer to all women. These data enable the study of extended time periods and multiple countries, but their coverage is insufficient for studying differences in employment between mothers and women without children.

In the current study we argue that, to learn how macro-level characteristics affect the micro-level association between women's fertility and employment, data are required that are measured at the micro level but that cover a substantial number of countries over an extended period of time. Such data would allow integration of the micro and macro explanations of women's labor force participation, enabling us to answer the new question of whether institutional arrangements influence the employment of mothers differently from the employment of women who do not have children (cf. Cooke & Baxter, 2010). Before moving on to the third and fourth factors that have limited previous research on women's employment, we raise a descriptive question: *To what extent are mothers in Organisation for Economic Co-Operation and Development (OECD) countries between 1975 and 1999 less likely to be employed than women without children?*

When seeking to explain differences in employment between mothers and women without children across multiple countries and over an extended period of time, a third limitation becomes clear: the use of only a micro-level or a macro-level approach. Macro-level studies that invoke institutional explanations of women's employment often compare countries without accounting for differences in their demographic compositions. Such analyses have tended to attribute all trends in women's employment, and all variation between countries, to differences in institutional arrangements or other contextual characteristics of the various countries. This overlooks the alternative explanation that women's demographic attributes may differ between countries and may have changed over time. For instance, in a number of countries women are now attaining higher educational levels than men. This points to the increasing importance that one accounts for demographic attributes to prevent biased estimates of the impact of institutional context.

The fourth and final factor that has limited previous studies, both macro-level and micro-level ones, is the tendency to describe institutional context using the broad typology of social-democratic, liberal, and conservative welfare states (cf. Esping-Andersen, 1990, 1999;

Matysiak & Vignoli, 2008). Studies based on welfare state typologies mask the exact aspects of institutional contexts that influence employment rates, both for all women and specifically for mothers. This limits their explanatory power, because it is unclear which features of the various welfare state arrangements affect women's employment. In addition, when a typology of welfare state arrangements is used with macro-level data on female labor force participation, this does not allow for the possibility that some aspects of the institutional context may influence only the employment of mothers and not that of women without children, whereas other aspects may affect all women.

This led to our second, explanatory, research question: *To what extent have institutional developments in OECD countries between 1975 and 1999 affected the employment of mothers differently from the employment of women without children?*

In answering these two questions, the current study improves on existing research and addresses the four limitations just described. We describe the difference in employment between mothers and women without children in 18 OECD countries over the 25 years from 1975 to 1999. We measured specific aspects of institutional context and tested how each affects the employment of mothers differently from the employment of women without children. We also examined the extent to which differences in employment between mothers and women without children in OECD countries between 1975 and 1999 can be explained by indicators of institutional context. In addition to differentiating between mothers and women without children, our tests accounted for other demographic background characteristics as well.

THEORY

Micro-level theories on women's employment generally treat the decision to seek paid employment as the outcome of an evaluation of the involved costs and benefits. These costs and benefits are not exclusively monetary. They also include, but are not limited to, time spent at work, practical difficulties of combining employment and motherhood, human capital development, contact with colleagues, and independence (Becker, 1991; Bernhardt, 1993; Brewster & Rindfuss, 2000).

In single-person households, the likelihood of a person seeking employment is expected to rise with increased investments in human capital and higher expected returns from employment. Shared households facilitate task specialization. This stimulates household members with more human capital and higher expected returns from employment to specialize in paid labor (Becker, 1991). Micro-level theories therefore hypothesize that women are more likely to be employed if they are childless, if they are single, and if they are highly educated. Because women from older cohorts, in general, have lower levels of education, married at earlier ages, and became mothers at earlier ages, in addition to having been socialized during a period of lower women's employment, the current study also controlled for women's birth cohort.

Institutional context influences the costs and benefits of employment as well. To support families with children, governments have implemented two types of policies, each with a different goal: (a) reconciliation policies that facilitate the combination of employment and parenthood and (b) financial support to families, which aims to reduce poverty among those with children (Gauthier, 1996). Both types of policies are targeted exclusively at families with children. We therefore did not expect them to influence the employment decisions of women without children.

Reconciliation policies, such as maternity and child-care leave, reduce the risk of a woman having to give up her job shortly before or after having a baby (cf. Del Boca, Pasqua, & Pronzato, 2008). Along these same lines, policies that mandate employers to continue to pay a substantial percentage of workers' wages while they are on maternity or child-care leave reduce the likelihood of a woman refraining from having children while employed or leaving employment when she does have a baby (Joesch, 1997).

This led to our *reconciliation policy hypothesis*: *Reconciliation policies will increase the likelihood that mothers are employed but will not affect the likelihood that women without children are employed. As a result, in societies with extensive reconciliation policies, the negative association between motherhood and employment will be weaker than in societies without reconciliation policies.*

Family financial support policies reduce families' need to earn extra income. Extensive family

allowances and tax benefits to families in effect reduce the cost of raising a child, diminishing the relative value of the monetary returns of mothers' employment (cf. Apps & Rees, 2004). We therefore expected that financial support policies would widen the gap in employment rates between mothers and women without children.

This led to our *financial support policy hypothesis*: *Policies that provide financial support to families will reduce the likelihood that mothers are employed but will not affect the likelihood that women without children are employed. As a result, in societies that provide extensive financial support to families, the negative association between motherhood and employment will be stronger than in societies that do not provide financial support to families.*

In addition to these two types of family policies, the labor market structure influences women's employment (Pettit & Hook, 2005). Contrary to the two types of family policies, we expected that the labor market structure would similarly affect the employment of both mothers and women without children.

First, the growth of the service sector has contributed to the rise in women's employment (Del Boca & Locatelli, 2006). This holds for both mothers and women without children. Second, high average female wages in the manufacturing sector stimulate the employment of women, even though this sector is regarded as providing less attractive options for women's employment. A final consideration regarding labor market structure is unemployment. We expected that high unemployment rates would diminish employment options for both mothers and women without children.

This led to our *labor market structure hypothesis*: *Both mothers and women without children will be more likely to be employed in societies with a large service sector, high female wages in manufacturing, and low unemployment. As a result, the size of the service sector, the level of female wages in manufacturing, and unemployment rates will not affect the negative association between motherhood and employment.*

METHOD

To account for both demographic and institutional determinants of women's employment in a large number of countries over a long period of time, we tested our hypotheses against cross-sectional data. We used a large number of pooled

cross-sectional surveys to cover 18 OECD countries from 1975 to 1999. We combined these survey data with macro-level indicators of reconciliation policies, financial support policies, and labor market structure and analyzed the data using logistic multilevel regression techniques.

Micro-Level Data

We obtained the vast majority of our micro-level observations from the Mannheim Eurobarometer Trend File, which provides pooled data from Eurobarometer surveys on selected trends in European countries (Schmitt & Scholz, 2005) as well as variables that were harmonized to ensure comparability. Extensive checks have been performed regarding both the coding of the variables and plausibility of trends over time (Schmitt & Scholz). To cover non-European countries as well, we added data on the United States and Canada that we obtained from the General Social Survey (Smith, Marsden, Hout, & Kim, 2010) and the Canadian Election Study (see <http://ces-ec.org/>). All surveys provided samples that, with the use of sampling weights, were representative of the respective country populations.

The wording of the questions in the three surveys provided comparable measures for several demographic background characteristics of individual women. These enabled us to analyze women's employment in 18 countries from 1975 to 1999 and to differentiate between mothers and women without children. Nevertheless, the number of comparable measurements was limited. For instance, we had information only on whether or not a woman was employed; no information was available on the number of hours women worked per week. Our sample lacked data on the ages of children, and the U.S. data did not enable us to discern whether children were still actually living at home. By restricting our complete data to women aged 20 to 50, we limited the number of women in our sample whose children had already left home.

All variables at both the micro and the macro levels were available for 305 country-years. At least 4 years were covered per country. This initially yielded a total of 429,475 observations on individual women. After omitting women younger than 20 and those older than 50, the selection consisted of 244,221 observations. Because of split ballot designs, 9,275 observations had missing

values. Of the remaining 235,946 observations, 43,462 (18.4%) contained at least one missing value; these were deleted listwise. Thus, 192,484 observations were left for analysis. In Supplementary Appendixes A, B, and C, available on the *Journal of Marriage and Family* web site ([http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1741-3737](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1741-3737)), we provide detailed information on the data, including wording of the questions, missing data per country-year, and number of valid observations for each country-year.

In Table 1 we present descriptive statistics of all variables used. We had five individual-level measurements:

1. *Employment status*, a binary dependent variable representing whether a woman was (coded 1) or was not (coded 0) involved in paid employment at the time of the survey.
2. *Motherhood*, a binary variable representing whether a woman was a mother (coded 1) or did not have children (coded 0).
3. *Partnered household*, a binary variable indicating whether a woman was living in a single-person household (single, divorced, or widowed; coded 0) or in a partnered household (married or living as married; coded 1) at the time of the survey.
4. *Education*, an interval-level variable that indicated the age at which a woman completed or ended her education.

5. *Cohort*, an interval-level variable that indicated the year a woman was born (range: 1925–1979).

Macro-Level Data

We combined the pooled micro-level survey data with several macro-level indicators of the institutional context. These contextual data concern both family policies and labor market structure. We obtained them from several databases designed for use in cross-country comparative research. Unfortunately, we had no access to indicators of child-care availability. All macro-level variables were measured at the country level and varied over time. We centered all of these variables at their respective mean values for all country-years, and divided their values by 10 or 100 for easier interpretation of the parameter estimates. In Table 1 we present both the original measurements and the centered measurements. Our macro-level measurements were derived from a number of sources.

From the Comparative Maternity, Parental, and Childcare Database (Gauthier & Botnik, 2001), we obtained three measures of reconciliation policies:

1. *Maternity leave*, the duration of maternity and parental leave in weeks divided by 10.
2. *Pay during leave*, which represented benefits during maternity and parental leave,

Table 1. *Demographic and Institutional Variables: Descriptive Statistics (N = 192,484 Individuals From 305 Country-Years From 18 Countries)*

Variables	Original Measurements			Centered Measurements Used in Analyses		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
Employment status ^a	.54		0–1	.54		0–1
Mother ^b	.61		0–1	.61		0–1
Partnered household ^c	.75		0–1	.75		0–1
Education	17.18	2.61	10–25	7.18	2.61	0–15
Cohort	53.25	8.48	25–79	28.25	8.48	0–54
Maternity leave (weeks ÷ 10)	15.88	7.69	0–64.00	0.00	0.77	–1.59–4.81
Pay during leave (÷ 100)	75.67	27.59	0–100.00	0.00	0.28	–0.76–0.24
Child-care leave (weeks ÷ 10)	44.44	55.50	0–156.00	0.00	5.55	–4.44–11.2
Family allowance (÷ 100)	11.16	10.03	0–46.18	0.00	0.10	–0.11–0.35
Family tax benefits (÷ 10)	18.43	7.37	3.00–39.40	0.00	0.74	–1.54–2.10
Service sector (÷ 10)	61.04	8.00	39.48–75.04	0.00	.80	–2.16–1.40
Female wages in manufacturing	1.76	1.09	0.08–4.42	0.00	1.09	–1.68–2.66
Unemployment (÷ 10)	8.52	3.69	0.20–23.80	0.00	0.37	–0.83–1.53

^a0 = not employed, 1 = employed. ^b0 = not a mother, 1 = mother. ^c0 = single-person household, 1 = partnered household.

expressed as a percentage of the average wage of women in manufacturing divided by 100.

3. *Child-care leave*, the duration of child-care leave in weeks divided by 10.

From the Comparative Family Benefits Database (Gauthier, 2003), we obtained two measures of financial support policies:

4. *Family allowance*, the monthly family allowance provided for the first child, expressed in 1970 USD (i.e., country-comparable units of purchasing power parity, corrected for inflation over time using consumer price indexes) divided by 100.
5. *Family tax benefits*, which represented the additional income after taxes and cash transfers of a single-earner family with two children, relative to such a family without children. It is expressed as a percentage divided by 10.

OECD statistics provided one of our measures of labor market structure:

6. *Service sector*, the proportion of the total labor force employed in the service sector divided by 10.

From the Comparative Family Benefits Database (Gauthier, 2003), we obtained two additional measures of labor market structure:

7. *Female wages in manufacturing*, the average hourly wage earned by women working in manufacturing, again expressed in 1970 USD.
8. *Unemployment*, the percentage of the civilian labor force that was unemployed divided by 10.

In Table 2 we present for each country in our data the earliest and latest year of observation, the number of country-years, and the number of individual observations.

Statistical Method

We analyzed the data using logistic multilevel regression models, estimated using the lme4 package in R (Bates & Maechler, 2010). We used a three-level model, with individual observations nested within country-years and countries. The contextual variables were measured at the level of the country-years. This nesting structure accounted for time-invariant unobserved country heterogeneity at the country level in explaining women's employment rates.

Table 2. *Countries and Country-Years: Descriptive Statistics* (N = 192,484 Individuals From 305 Country-Years From 18 Countries)

Country	Earliest Observed Year	Latest Observed Year	No. Observed Country-Years	No. Individual Observations
Austria	1995	1998	4	3,309
Belgium	1975	1997	23	14,729
Canada	1984	1998	4	3,699
Denmark	1975	1998	24	14,872
France	1975	1998	23	16,785
Germany, East	1990	1998	9	6,209
Germany, West	1975	1998	24	15,060
Greece	1980	1997	18	10,966
Ireland	1975	1998	24	15,183
Italy	1975	1997	23	14,453
Luxembourg	1975	1996	22	4,843
Netherlands	1975	1998	24	18,058
Norway	1990	1996	6	1,801
Portugal	1985	1998	14	8,514
Spain	1985	1999	15	8,961
Sweden	1995	1998	4	2,351
United Kingdom	1975	1999	25	21,733
United States	1975	1998	20	10,958
Total	1975	1999	305	192,484

RESULTS

To answer our first question, regarding the extent to which women in OECD countries combined motherhood and employment between 1975 and 1999, we calculated odds ratios for the association between motherhood and employment for each unique combination of country and year. In Figure 1 we present the log of these odds ratios (i.e., logit). A logit less than 0 means that mothers were less likely to be employed than women without children. Stronger negative values indicate that women were less likely to combine motherhood and employment in that specific year and country. The gray lines represent the linear trend. A rising slope means that women increasingly combined motherhood and employment within that country over time.

The findings depicted in Figure 1 answer our first research question: Substantial variation in the degree to which women combined motherhood and employment was observed between countries and within countries over time. Mothers were less likely to be employed than women without children in all but one country during the complete period from 1975 to 1999. The only exception is Denmark, where in several years mothers and women without children were equally likely to hold a paid job. Women were much more likely to combine motherhood and employment in some countries than in others during the entire observation period. For instance, in Denmark and Belgium, the negative association between motherhood and employment was much weaker than in Ireland, Luxembourg, and the United States. In addition to these absolute differences, countries also differed in their degree of change over time. The average trend was that the difference in employment between mothers and women without children grew smaller ($p < .05$, two-tailed). We also tested these trends for significance for each country separately and found no trend in Canada, Denmark, East Germany, France, Greece, Italy, and Spain. The same holds for Austria and Sweden, but we point out that these findings only apply to a limited number of years. In Belgium, Ireland, Luxembourg, the Netherlands, the United Kingdom, and the United States we found an upward trend, indicating a narrowing over time of the employment gap between mothers and women without children. Most countries in which the employment gap between mothers

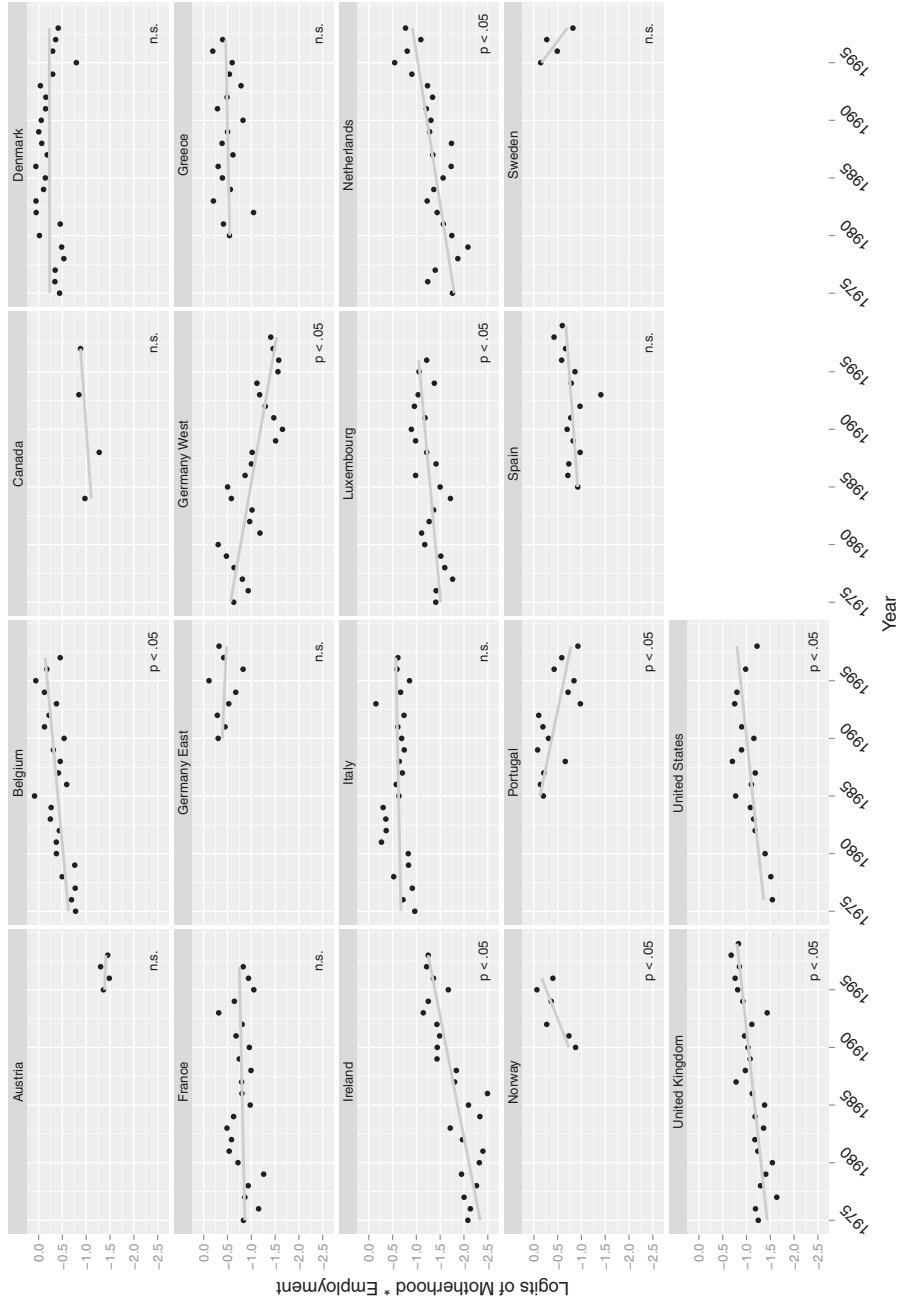
and women without children grew smaller were those in which this gap was relatively large at the start of our observation period. Finally, we noted that the employment gap increased in Portugal and especially in West Germany.

Before we explained the variation in the degree to which motherhood and employment were combined between countries and within countries over time, and before we tested our hypotheses, we used regression models to estimate the extent to which demographic and institutional indicators account for variation in women's employment (see Table 3). First, the null model contains no explanatory variables. It indicates the average proportion of women who were employed and variation between countries and within countries over time. The estimate of the intercept indicated that, on average, $\exp(.30)/[1 + \exp(.30)] = 57\%$ of the women were employed. Variation in the proportion of women holding a job was indicated by the variation of the random intercept. The variance in employment between countries (.36) was larger than the variation within countries (.13).

In Model 1, we estimated the effects of demographic variables on women's employment. The outcomes were in line with standard expectations of micro-level theories: Women were less likely to be employed if they were a mother, if they lived in a shared household, if they had a low educational level, and if they had been born in an older cohort. These demographic indicators explained 19% of the variation in women's employment between countries, but they were much better in explaining the variation within countries: $(.13 - .05)/.13 = 62\%$.

In Model 2, we estimated the effects of the institutional indicators. The results show that women were more likely to be employed in societies with long periods of child-care leave, low levels of tax benefits to families, a large service sector, and low unemployment. Variation between countries was explained much better by this model (now 50% explained variance). The institutional indicators also improved the explanation of variation within countries (now 77% explained variance). Adding the institutional context aspects, however, reduced the deviance only very slightly compared with the reduction brought about by the demographic indicators. Thus, women's demographic background explained individual employment decisions better than the institutional arrangements.

FIGURE 1. TRENDS IN COMBINING MOTHERHOOD AND EMPLOYMENT IN 18 ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT COUNTRIES, 1975 – 1999.



Note: N = 192,484 individuals from 305 country-years from 18 countries; calculations are the authors' own. Lines represent linear trend, estimated with the ordinary least squares criterion. Significance per country is indicated in the various panels. The data are described in more detail in the METHOD section.

Table 3. Multilevel Model Results Predicting Women's Employment From Demographic and Institutional Factors
(N = 192,484 Individuals From 305 Country-Years From 18 Countries)

Variable	Null Model		Model 1: Demographic		Model 2: Institutional		Model 3: Variation in Combining Motherhood and Employment	
	B	SE	B	SE	B	SE	B	SE
Intercept	.30*	.14	-.33*	.13	-.33**	.10	-.29**	.11
Individual level								
Mother			-.70***	.01	-.69***	.01	-.72***	.03
Partnered household			-.61***	.01	-.61***	.01	-.61***	.01
Education			.16***	.00	.16***	.00	.16***	.00
Cohort (÷ 10)			.01***	.00	.01***	.00	.01***	.00
Country-year level								
Maternity leave (weeks ÷ 10)					-.02	.05	-.03	.05
Pay during leave (÷ 100)					.08	.16	.14	.16
Child-care leave (weeks ÷ 10)					.02*	.01	.02**	.01
Family allowance (÷ 10)					.08	.30	.08	.29
Family tax benefits (÷ 10)					-.10**	.04	-.07*	.04
Service sector (÷ 10)					.26***	.03	.26***	.03
Female wages in manufacturing					.06	.05	.05	.04
Unemployment (÷ 10)					-.33***	.07	-.36***	.07
Variances								
Country-year								
σ^2 intercept	.13		.05		.03		.11	
σ^2 of mother							.28	
R (intercept, mother)							-.85	
Country								
σ^2 intercept	.36		.29		.18		.18	
Deviance	249,754		231,885		231,777		230,153	

Note: All values are weighted.

* $p < .05$, one-tailed. ** $p < .01$, one-tailed. *** $p < .001$ (one-tailed).

Up to this point, our models were based on the assumption that the negative association between motherhood and employment was equally strong in all countries and in all years. We argued, however, that this would not be the case, and in Figure 1 one can observe considerable variation between countries and within countries over time. We therefore allowed the strength of the association to vary by introducing a random slope at the country-year level in Model 3. The variance (.28) of this random effect represented the variation in the degree to which women combined having children with employment. The average estimate of the association between motherhood and employment was $-.72$. In 95% of the country-years this estimate was between -1.78 and 0.34 ($-.72 \pm 2 \times .28^{1/2}$). Finally, we observed

a negative correlation ($-.85$) at the country-year level between the random intercept and the random slope of the motherhood – employment association. This indicates that the countries in which the negative association between a women's motherhood and her employment was weak were also those with low levels of women's employment. We return to this enigmatic finding in the DISCUSSION section.

Explaining the Degree to Which Employment and Motherhood Are Combined

The previous tests, of course, were not about the extent to which institutional arrangements helped women to combine motherhood and employment; they merely provided information on the explanatory power of our regression

models and the background for testing our hypotheses. In this section we aim to answer our second question, concerning the extent to which, over time, the institutional context in OECD countries has influenced employment of mothers differently from the employment of women without children. We estimated cross-level interactions between macro-level measurements of institutional context and the micro-level association between motherhood and employment. The results are presented in Tables 4, 5, and 6.

We used the models presented in Table 4 to test our reconciliation policy hypothesis. Contrary to our expectation, women without

children were less likely to be employed in societies with long maternity leave periods compared with women without children in societies with short maternity leave periods (Model 1). In line with our expectations, we found no effect of family policies related to pay during leave (Model 2) and child-care leave on the likelihood that women without children would be employed (Model 3). The significant and positive interaction terms indicate that all three reconciliation policies increased the likelihood of mothers being employed. For instance, the estimated effect of maternity leave for mothers was $-.12 + .16 = .04$. This means that all three reconciliation policies narrowed the

Table 4. Multilevel Model Results Predicting Women's Employment From Cross-Level Interactions Between Reconciliation Policies and a Woman's Motherhood (N = 192,484 Individuals From 305 Country-Years From 18 Countries)

Variable	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Intercept	-.29**	.11	-.29**	.11	-.30**	.11
Individual level						
Mother	-.73***	.03	-.73***	.03	-.73***	.03
Partnered household	-.61***	.01	-.61***	.01	-.61***	.01
Education	.16***	.00	.16***	.00	.16***	.00
Cohort (÷ 10)	.01***	.00	.01***	.00	.01***	.00
Country-year level						
Maternity leave (weeks ÷ 10)	-.12*	.05	-.03	.05	-.03	.05
Pay during leave (÷ 100)	.13	.16	.03	.17	.14	.16
Child-care leave (weeks ÷ 10)	.02**	.01	.02**	.01	.01	.01
Family allowance (÷ 10)	.08	.30	.08	.30	.09	.30
Family tax benefits (÷ 10)	-.07*	.04	-.07*	.04	-.07*	.04
Service sector (÷ 10)	.26***	.03	.26***	.03	.26***	.03
Female wages in manufacturing	.05	.04	.05	.04	.05	.04
Unemployment (÷ 10)	-.36***	.07	-.36***	.07	-.36***	.07
Interaction with motherhood (×)						
Maternity leave (weeks ÷ 10)	.16***	.04				
Pay during leave (÷ 100)			.20*	.12		
Child-care leave (weeks ÷ 10)					.02***	.01
Variances						
Country-year						
σ ² intercept	.11		.11		.11	
σ ² of mother	.26		.27		.27	
R (σ ² intercept, σ ² of mother)	-.84		-.85		-.85	
Country						
σ ² intercept	.18		.18		.18	
Deviance	230,136		230,150		230,141	

Note: All values are weighted. All hypotheses were tested one-tailed, except the main effects for the family policies; these were tested two-tailed.

*p < .05. **p < .010. ***p < .001.

Table 5. Multilevel Model Results Predicting Women's Employment From Cross-Level Interactions Between Financial Support Policies and a Woman's Motherhood (N = 192,484 Individuals From 305 Country-Years From 18 Countries)

Variable	Model 1		Model 2	
	B	SE	B	SE
Intercept	-.30**	.11	-.29**	.11
Individual level				
Mother	-.73***	.03	-.73***	.03
Partnered household	-.61***	.01	-.61***	.01
Education	.16***	.00	.16***	.00
Cohort ($\div 10$)	.01***	.00	.01***	.00
Country-year level				
Maternity leave (weeks $\div 10$)	-.03	.05	-.03	.05
Pay during leave ($\div 100$)	.13	.16	.14	.16
Child-care leave (weeks $\div 10$)	.02**	.01	.02**	.01
Family allowance ($\div 10$)	.43	.35	.08	.30
Family tax benefits ($\div 10$)	-.07*	.04	-.05	.04
Service sector ($\div 10$)	.26***	.03	.26***	.03
Female wages in manufacturing	.05	.04	.05	.04
Unemployment ($\div 10$)	-.36***	.07	-.36***	.07
Interaction with motherhood (\times)				
Family allowance ($\div 10$)	-.63**	.33		
Family tax benefits ($\div 10$)			-.03	.04
Variances				
Country-year				
σ^2 intercept	.11		.11	
σ^2 of mother	.27		.28	
R (σ^2 intercept, σ^2 of mother)	-.85		-.85	
Country				
σ^2 intercept	.18		.18	
Deviance	230,149		230,152	

Note: All values are weighted. All hypotheses were tested one-tailed, except the main effects for the family policies; these were tested two-tailed.

* $p < .05$. ** $p < .010$. *** $p < .001$.

employment gap between mothers and women without children.

We tested the financial support hypothesis using the models in Table 5. In line with our expectations, neither family allowances (Model 1) nor family tax benefits (Model 2) influenced the employment of women without children. Family tax benefits were also found to have no effect on employment of mothers, in contradiction to our hypothesis. Family allowances, in support of our hypothesis, decreased the likelihood of a mother being employed. Together, these findings indicate that the difference in employment between mothers and women without children was larger in societies with high family allowances.

We tested the labor market structure hypothesis using the models in Table 6. As hypothesized, women without children were more likely to be employed in societies with a large service sector (Model 1), high female wages in manufacturing (Model 2), and low unemployment (Model 3). Nonsignificant estimates were found for the interaction terms between the motherhood – employment association on the one hand and service sector size and unemployment levels on the other hand. These aspects of institutional context therefore did not appear to have affected mothers' employment differently from the employment of women without children. Both mothers and women without children were more likely to be employed in societies

Table 6. Multilevel Model Results Predicting Women's Employment From Cross-Level Interactions Between Labor Market Structure and a Woman's Motherhood (N = 192,484 Individuals From 305 Country-Years From 18 Countries)

Variable	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Intercept	-.29**	.11	-.29**	.11	-.30**	.11
Individual level						
Mother	-.73***	.03	-.73***	.03	-.73***	.03
Partnered household	-.61***	.01	-.61***	.01	-.61***	.01
Education	.16***	.00	.16***	.00	.16***	.00
Cohort (÷ 10)	.01***	.00	.01***	.00	.01***	.00
Country-year level						
Maternity leave (weeks ÷ 10)	-.03	.05	-.03	.05	-.03	.05
Pay during leave (÷ 100)	.13	.16	.14	.16	.14	.16
Child-care leave (weeks ÷ 10)	.02**	.01	.02**	.01	.02**	.01
Family allowance (÷ 10)	.08	.30	.08	.30	.09	.30
Family tax benefits (÷ 10)	-.07*	.04	-.08*	.04	-.07*	.04
Service sector (÷ 10)	.27***	.04	.26***	.03	.26***	.03
Female wages in manufacturing	.05	.04	.08*	.05	.05	.04
Unemployment (÷ 10)	-.36***	.07	-.36***	.07	-.42***	.08
Interaction with motherhood (×)						
Service sector (÷ 10)	-.02	.04				
Female wage in manufacturing			-.07**	.03		
Unemployment (÷ 10)					.11	.08
Variances						
Country-year						
σ ² intercept	.11		.11		.11	
σ ² of mother	.28		.27		.27	
R (σ ² intercept, σ ² of mother)	-.85		-.85		-.85	
Country						
σ ² intercept	.18		.18		.18	
Deviance	230,153		230,147		230,151	

Note: All values are weighted. All hypotheses were tested one-tailed, except the main effects for the family policies and the interaction terms for the labor market structure; these were tested two-tailed.

* $p < .05$. ** $p < .010$. *** $p < .001$.

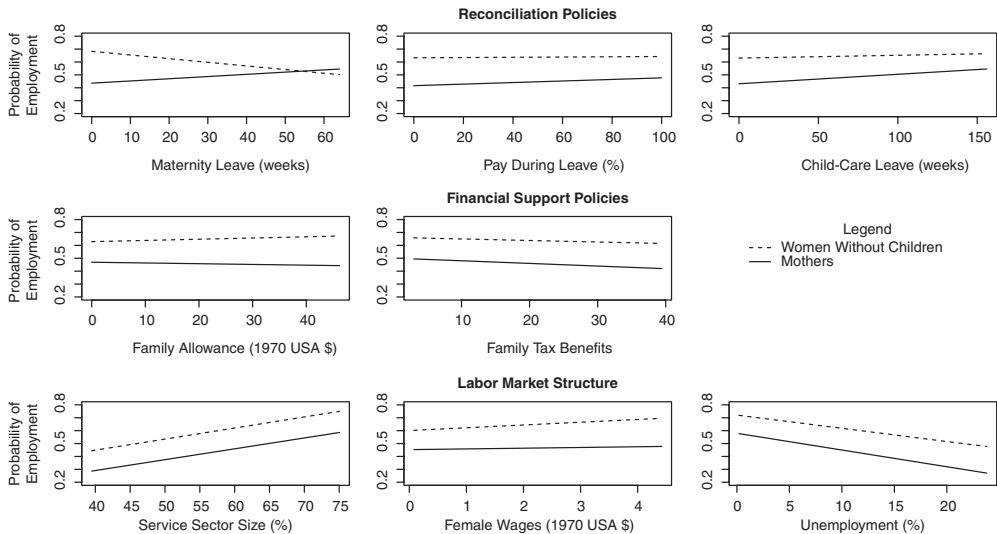
with a large service sector and low unemployment. We calculated the effect of female wages for mothers by subtracting the interaction term (-.07) from the main effect of female wages (.08). The result, $.08 - .07 = .01$, is very close to 0, indicating that the employment of mothers was barely affected by high female wages in manufacturing. Therefore, in contradiction to our labor market structure hypothesis, we found that high female wages in manufacturing widened the employment gap between mothers and women without children.

To evaluate the robustness of our conclusions, we tested our models for the presence of overly influential data. Some countries in our sample were observed for only a limited number of years. This might have biased our results.

After omitting the four countries with the fewest observations (Canada, Austria, Sweden, and Norway), our findings remained virtually unaltered. Tools for detecting influential data in multilevel models (Nieuwenhuis, Pelzer, & te Grotenhuis, 2011) also established that omission of singular country-years did not result in substantially different conclusions regarding the main effects of the institutional determinants. The combined outcomes of these tests suggested that our conclusions are robust to changes in the selection of the OECD countries in our sample.

Evaluation of the missing micro-level data using techniques for multiple data imputation (Van Buuren & Groothuis-Oudshoorn, 2011) showed that neither the estimates of demographic variables nor the estimates of the

FIGURE 2. PROBABILITY OF EMPLOYMENT OF MOTHERS AND OF WOMEN WITHOUT CHILDREN IN VARIOUS INSTITUTIONAL CONTEXTS.



Note: $N = 192,484$ individuals from 305 country-years from 18 countries; calculations are the authors' own. The data are described in more detail in the METHOD section.

cross-level interactions were affected by the presence of missing data in such a way that our general conclusions would change.

Finally, we calculated the predicted probability of employment of both mothers and women without children in different institutional contexts, using the estimates presented in Tables 4, 5, and 6. This provided a more informative interpretation of the outcomes in terms of how strongly various contexts influenced the employment of mothers and women without children. For each aspect of context, we calculated the predicted probability of employment of mothers and women without children, for both the lowest and the highest measured value of that specific aspect of institutional context. All individual-level variables other than motherhood were kept constant at values indicating a woman living in a shared household, born in 1950, and having completed her education at age 15. All institutional variables were controlled for at their respective average. The outcomes are presented in Figure 2.

Recall that the difference in employment between mothers and women without children was substantially smaller in countries with extended maternity leave, pay during leave, and child-care leave. This is well illustrated in the figures on reconciliation policies (see the

first row of Figure 2). The effect of pay during leave is weakest, but in countries with very long periods of maternity leave, employment among mothers was estimated to be on par with that of women without children.

Financial support policies had considerably less impact on women's employment than the reconciliation policies. Nevertheless, we found that extensive family allowances widened the employment gap between mothers and women without children.

Regarding labor market structure, service sector size and unemployment levels had a much stronger influence than female wages in manufacturing on the employment of both mothers and women without children. Moreover, the impact of several family policies was outweighed by service sector size and unemployment levels, again both for mothers and for women without children. Finally, mothers were barely affected by high female wages in manufacturing, although high wages did increase the employment of women without children.

DISCUSSION

This study combined micro- and macro-level explanations of women's employment. Integrating demographic and institutional factors

enabled us to explore the extent to which these influenced the employment of mothers differently from the employment of women without children. Our data covered 18 OECD countries and the 25 years between 1975 and 1999. Our analyses showed that women's employment was associated with both demographic and institutional characteristics. It also revealed an interplay between institutional context and motherhood.

We found substantial variation in the employment gap between mothers and women without children between countries and over time. This gap was smallest in Denmark and showed no significant trend in that country. This is consistent with the constantly high level of pay during leave and the long duration of maternity leave in that country. The increasing duration of maternity leave in Norway, higher levels of pay during leave in Ireland, and the implementation of child-care leave in combination with high levels of pay during leave in the Netherlands are all consistent with the decreasing gap in employment between mothers and women without children that we observed in these countries. Mothers became less likely to be employed compared with women without children in West Germany. Germany has often been recognized as supporting the traditional breadwinner model (e.g., Cooke, 2011), which in our model was represented by strongly increasing levels of and family allowances over time, especially after 1990.

The case of West Germany also raises the issue of how it is possible that women became less likely to combine motherhood and employment while during the same period the employment of all women in West Germany rose markedly. The same applies to Portugal. A demographic explanation of this finding is that fertility decreased in these countries. An institutional explanation refers to the increasing size of the service sector. As shown in Figure 2, a large service sector was associated with a high level of employment among women, and this influence is on par with that of several family policies. A large service sector was not found to help women who combined motherhood and employment, however. Therefore, in the example of Germany, our findings suggest that the growing size of the service sector stimulated the employment of mothers and women without children equally and therefore did not counter the growing employment gap

between mothers and women without children that resulted from increasing levels of family allowance. More generally, our findings thus suggest to policymakers that alleviating the difficulties involved in combining motherhood and employment is not the only thing that stimulates women's employment; labor market structure appears to be just as important.

Our findings reveal several advantages of integrating demographic and institutional explanations of women's employment. First, using multiple pooled data sets, we tested the effects of eight characteristics of institutional context on women's employment, controlling for demographic factors. The combined data enabled us to differentiate the institutional context's effects on mothers from the effects on women without children. This led to a stricter test and thus to a more detailed understanding of how institutional contexts influence women's decisions regarding employment. The cross-level interactions in Tables 4, 5, and 6 provide much more informative findings on the outcomes of family policies and labor market structure compared with the findings presented in Table 3, which made no distinction between mothers and women without children. By making this distinction, we were able to show that most family policies consistently influence the employment of mothers but are unrelated to the employment of women without children. Future studies might take this approach a step further, using multiactor models that include characteristics of partners within the household. Such research could advance our understanding of the effects of institutional context on women's and men's employment.

Second, the literature on the association between women's employment and fertility often observes that the cross-country correlation between female labor force participation and total fertility rates turned positive after about 1985 (Ahn & Mira, 2002). It was also suggested that the micro-level association between women's employment and number of children became less negative over time (e.g., Kögel, 2004). Nevertheless, because most studies have used macro-level data only, this has not actually been tested. To this literature we add the finding that in many countries, over time, women became more likely to combine motherhood and employment, but that this is not the case in all countries. Moreover, in our models motherhood and employment were combined

more frequently in societies with low levels of women's employment. The statistical resolution of this paradox is that in our multivariate models the countries in which women were less likely to be employed and in which women were more likely to combine having children with employment were also those in which women were more likely to be a mother. Examples of this finding include Greece, Portugal, and Italy, where we observed relatively small employment gaps between mothers and women without children and relatively low women's employment. During the first decades we covered in our study, these countries had high fertility as well. Again, we emphasize that in this study we were not able to make causal inferences regarding the micro-level association between motherhood and employment. This finding that the employment gap between mothers and women without children is smaller in countries with high fertility allows for three interpretations. The first interpretation is that if motherhood and employment are difficult to combine, women limit their fertility. Indeed, a recent study showed that women postponed their fertility in the absence of supportive family policies (Mills, Rindfuss, McDonald, & te Velde, 2011). A second possible explanation is that countries with low fertility rates, or employers in these countries, are less likely to enact reconciliation policies because the relatively small number of mothers has a limited political voice. A third interpretation is that policies aimed at increasing fertility rates, such as family allowances, indeed increase fertility but also reduce the likelihood that women combine motherhood with employment. We found this last effect of family allowances in the present study, although it was not very strong. All three interpretations are supported by our empirical findings, but they make different assumptions regarding the causal order underlying the motherhood – employment association. In addition, the second interpretation regards the institutional context as an outcome, rather than as a cause, of women's behavioral decisions. The use of country-comparative event-history analyses would allow future studies to disentangle the direction of causality of the micro-level motherhood – employment association. This technique would also allow for a more detailed modeling of the timing of events such as childbirth and employment entry or exit and therefore provide a stricter test of whether changes in institutional context are indeed followed in time (rather than

preceded) by changes in decisions regarding motherhood and employment.

Finally, as noted earlier, institutional contexts explained a considerable amount of the variation in women's employment between countries, although the demographic indicators were better than the institutional ones in explaining the employment of individual women. Pettit and Hook (2005) reported a similar finding. Although the institutional context shapes the general pattern of how women organize their employment in a society, personal decisions associated with a woman's individual demographic background still play a key role. The current study emphasized the opportunities that institutional contexts provide for women to be employed and to combine motherhood and employment. Future studies could test the argument that opportunities do not lead to action on their own, nor do mere preferences; instead, it is the interaction of opportunities and preferences that spurs behavior. Just as demographic outcomes, such as those associated with having children, were seen to vary by institutional context (cf. Cooke & Baxter, 2010), institutional outcomes can vary by demographic strata. Similarly, Fuwa (2004) reported that, in regard to understanding household dynamics, women's individual assets were more important in countries that provide a gender egalitarian context than in countries without such context. To better understand the influence of institutional arrangements on women's employment, future studies could therefore focus on the contribution of the interplay between opportunities and preferences in determining women's employment and examine how this process can lead to socially stratified outcomes of the effects of institutional context.

In addition to proposing several improvements for future research, we found that mothers and women without children were more likely to be employed in societies with a large service sector and low unemployment. Mothers were more likely to be employed in societies with extensive reconciliation policies and limited family allowances. The employment of women without children was unaffected by family policies. Most important, by integrating micro and macro explanations of women's employment, this study constitutes an important step in examining the interplay between institutional and demographic factors in combining work and family life.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix A Introduction.

Appendix B Question Wording.

Appendix C Number of Observations.

Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.

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