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Working Paper

The Structure of Women's Employment in Comparative Perspective

LIS Working Paper Series, No. 330

Provided in Cooperation with:

Luxembourg Income Study (LIS)

Suggested Citation: Pettit, Becky; Hook, Jennifer (2002) : The Structure of Women's Employment in Comparative Perspective, LIS Working Paper Series, No. 330, Luxembourg Income Study (LIS), Luxembourg

This Version is available at:

<https://hdl.handle.net/10419/161002>

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Luxembourg Income Study Working Paper Series

Working Paper No. 330

**The Structure of Women's Employment
in Comparative Perspective**

Becky Pettit and Jennifer Hook

September 2002



Luxembourg Income Study (LIS), asbl

The Structure of Women's Employment in Comparative
Perspective

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¹This paper was prepared for presentation at the Population Association of America Annual Meetings, May 8-10, Atlanta, GA. We would like to thank Kevin Quinn, Rob Warren, and Bruce Western for helpful suggestions. This research was supported by the Center for Statistics and the Social Sciences with funds from the University Initiatives Fund at the University of Washington, and a National Science Foundation graduate fellowship for Hook. Please direct correspondence to Becky Pettit, Department of Sociology, University of Washington, 202 Savery Hall, Box 353340, Seattle, WA 98195-3340, bpettit@u.washington.edu.

Abstract

One of the most dramatic social transformations of the latter half of the twentieth century involved the massive influx of women into the paid labor force. A central debate in studies of women's labor force participation concerns the influence of demographic and economic structures and institutional conditions on female employment. Single-country studies show consistent relationships between demographic and economic conditions and women's labor force participation. In contrast, comparativists emphasize institutional explanations for observed cross-national variation in aggregate levels of female employment. In this paper we analyze social survey data from 18 countries using multi-level modeling methods in an effort to synthesize structural and institutional accounts for variation in women's employment. Structural conditions including unemployment and service sector growth are important predictors of the overall level of women's employment. The effects of demographic characteristics on women's employment vary significantly across countries, and results suggest differences in policy context are associated with women's employment. In particular, federally supported child care is associated with an increase in the probability of employment among married women and women with children.

Introduction

One of the most dramatic social transformations of the latter half of the twentieth century involved the massive influx of women into the paid labor force. The large scale movement of women into wage labor after World War II has occurred in every OECD country, although the level of female employment and the rate of growth in women's entry into the labor force vary substantially across nations. Data from the early 1990s show that women's overall employment rates ranged from 85% in Sweden to 31% in Spain (Gornick 1999).

A central debate in studies of women's labor force participation concerns the influence of economic structures and institutional arrangements on the extent of female employment. With foundations in micro-economics (e.g., Becker 1981), one body of work suggests that women's involvement in the paid labor force is largely in response to the costs and benefits of wage labor relative to domestic work and other pursuits. Research in this tradition contends that increases in women's labor force participation and attachment to work, particularly among married women with young children, may be attributed to structural changes in the economy and demographic shifts that influence the demand for, and supply of, women workers. On the demand side, growth in female dominated occupations in the post WWII era have led to a rising demand for female workers (Oppenheimer 1970; England and Farkas 1986). On the supply side, increases in education, later age at marriage, lower fertility, increased consumption, and growing preferences among women for non-domestic roles may have worked to increase female employment (England and Farkas 1986; Goldin 1990). The force of structural and demographic effects can be seen in post WWII growth in women's employment in all OECD countries.

Researchers of comparative analysis counter that institutional variation provides another explanation for cross-national variation in women's attachment to the labor force (e.g., Blossfeld and Hakim 1997; Rosenfeld and Birkelund 1995; Gornick 1999; O'Connor, Orloff and Shaver 1999). The general increase in women's labor force participation in the 18 OECD countries from 1960 to 1990 has been accompanied by substantial variation in the rate of female employment across countries. Drawing on Esping-Anderson's (1990) welfare state typology, several researchers have noted that social democratic states - the Nordic countries - have highest levels of participation, liberal states - English speaking countries - have the next highest, and conservative corporatist countries - Germany, France, Austria, Netherlands, and Italy - have lowest rates of female employment (O'Connor et al. 1999; Gornick 1999). There are a number of theoretical explanations for cross-national differences in rates of female employment. Levels of female employment may be influenced by beliefs about gender equality and attitudes towards female employment, or policies that support women as mothers and workers.

Despite a host of shared concerns, these two research traditions have distinct theoretical underpinnings, and have employed different research methods. Structural theories of women's labor force participation assume labor markets as undifferentiated forums for wage labor exchange. Women's employment patterns are viewed as rational responses to the costs and benefits of wage labor. Structural theories have largely been tested using micro-level data from individual countries. Data from single countries (though sometimes more than one) have been used to assess the influence of demographic and economic conditions on women's involvement in, and attachment to, the paid labor force.

Comparative analysts often conceptualize differences in the level of female

employment as the result of a configuration of norms and policies supporting the employment of women and mothers. Comparativists contend that cultural norms about gender role specialization are reflected in rates of female employment. In addition, welfare state development has been theorized to affect the level of women's employment. The level of female employment is expected to be high in countries where the state provides generous benefits to women as mothers and workers. State supports that enable women to balance work and family are expected to reinforce women's attachment to the paid labor force even after they have children. In contrast, female employment is hypothesized to be much lower, particularly among mothers, where states provide benefits to families through the primary wage earner (typically male). Comparative analysis often utilizes highly aggregated data from many countries to examine determinants of overall levels of female employment, paying less attention to heterogeneity within countries.

In this paper we analyze social survey data from 18 countries using multi-level modeling methods in an effort to synthesize structural and institutional accounts for variation in women's employment. Individual women's employment decisions may be affected by the costs and benefits of wage labor relative to domestic work or other pursuits. However, labor markets are not undifferentiated forums for wage-labor exchange and we suspect that institutional conditions may influence the probability of women's employment. Our results indicate that structural conditions are important predictors of the overall level of women's employment, yet differences in policy context are associated with employment probabilities of particular groups of women.

Structural explanations for women's work

Neoclassical economic theory suggests that employment decisions of women are the result of shifts in the cost and benefit of wage labor relative to other pursuits including domestic labor, home production, and leisure time. The cost and benefit of wage labor is influenced by both the demand for labor and the labor supply. Many economists contend that the rapid increase of women into paid employment in the post WWII era can be understood as a consequence of shifts in both the demand for, and supply of, women's labor (e.g., O'Neill 1981). In an early study of the post WWII rise in women's employment in the US, Oppenheimer (1970) argued that increased demand in female-dominated occupations helped drive married women into the paid labor force. Sectoral shifts in the economy, including a movement away from agriculture and manufacturing, increased the share of employment in female-typed occupations (e.g., service industries and occupations). Since these occupations were already dominated by women, employers sought to fill new positions with women as well. Oppenheimer (1970) attributes the growth in women's employment to the increased demand for labor within female-typed occupations.

Increased demand in female-typed jobs may not necessarily lead to an increase in women's involvement in paid labor, particularly if wages do not rise to shift the cost-benefit relationship to labor force involvement (England and Farkas 1986). England and Farkas (1986) find that women's inflation-adjusted wages did go up in the 1950s and 1960s, which lends credence to the demand-side argument for women's movement into the paid labor force in the early period following WWII. Goldin (1990) also argues that sectoral shifts in demand toward the service sector, reduced work hours, and increased real wages have encouraged women's labor force participation.

Although there is substantial support for demand-side explanations for women's increasing involvement in the paid labor force in the 1950s and 1960s, there is less support for demand-side explanations in later years when women's wages stagnated. Women's employment may have continued to rise, however, because of shifts in the supply of women workers. Possible causes of the shift include changing sex-role socialization, later age at marriage, lower fertility, higher divorce rates, and rising consumption patterns driving more women into the paid labor force despite wage stagnation in the 1970s (e.g., England and Farkas 1986). Arguments also suggest that women's involvement in the paid labor force has increased as women have gained education and training and become more competitive in the labor market (Goldin 1990).

The aforementioned research focuses on demographic and structural explanations for the increase in women's labor force participation in the US, however researchers have also examined women's employment in other countries using a similar micro-economic framework. For example, Drobnic, Blossfeld and Rohwer (1999) have examined women's employment in Germany and find that family structure is an important determinant of women's employment and part-time work. Hoem (1995) examines the labor force decisions of women in Sweden, suggesting that recent increases in women's employment have been due to the expansion of sectors of the economy that traditionally employ women.

Structural accounts of women's labor force participation describe the conditions that influence the costs and benefits of employment for both employers and workers. In this view, labor markets are viewed as undifferentiated forums of wage-labor exchange and the institutional context for women's employment is taken to be fixed. This is evident in a research design that focuses on individual countries.

Comparative approaches to women's employment

Structural accounts of women's labor force participation are incomplete from a comparative point of view. Cross-national variation in women's employment may result from national norms and institutional arrangements that facilitate women's involvement in paid employment, or alternatively discourage women from participating in the paid labor force. One explanation for cross-national differences in patterns of women's work stems from beliefs about gender equity. National ideologies about gender equity may influence the level of employment among women by influencing the acceptability of female employment and thus the attractiveness of employment to women. Women's political gains in the 20th century accompanied the fall of many barriers to female involvement in the paid labor force, and may help explain cross-national differences in rates of female employment. Theorists have contended that overall indicators of gender equality - operationalized by women's representation in political office, domestic abuse rights, and reproductive rights - are important determinants of gender equity in employment patterns (Crompton and Harris 1997; O'Connor et al. 1999).

Many comparativists have also understood female labor force participation in relation to broad policy configurations and overall welfare state development. Esping-Anderson's (1990) typology of welfare states has been invoked to explain high levels of labor force participation in social democratic states, slightly lower levels of female employment in liberal welfare states, and even lower levels of employment in corporatist welfare states (e.g., Esping-Anderson 1999; O'Connor et al. 1999; Gornick 1999). Social democratic countries are characterized by generous income transfers, support for full employment and high wages, subsidized child care, and high employment of women in the public sector. Liberal welfare states take a

hands-off approach to social policy, leaving the market largely unrestricted. Corporatist countries also have generous income transfer systems, and labor market policies that encourage high wages. However, their benefit systems are family-centered, rather than individual-centered and they tend to reinforce traditional divisions of labor between men and women.¹

Although a general classificatory scheme of welfare state development is useful for understanding variation in women's attachment to employment, there is sufficient variation within nations and across welfare state typologies to suggest that Esping-Anderson's (1990, 1999) tripartite division of welfare states may be insufficient for understanding cross-national variation in women's labor force participation. Recent research finds a complex relationship between institutional policies and women's employment patterns. Policies affect women's continuous attachment to the labor force, but these policies do not necessarily coincide with welfare regime types (Steir, Lewin-Epstein, and Braun 2001).

An integrated framework for understanding women's labor force attachment

In this paper we integrate structural and institutional explanations for women's employment. In the structural approach, women's employment is understood as a response to the costs and benefits of wage labor relative to other pur-

¹It is important to note that women's employment may be endogenous to welfare state development. That is, high levels of female employment may precede high levels of welfare state development (Huber and Stephens 2000), rather than the other way around. Alternatively, the correlation between high levels of female employment and welfare state development may be spurious; some unobserved factor such as gender equity or religious origins of a country may explain both high levels of female employment and high levels of welfare state development.

suits. Labor markets are viewed as undifferentiated forums of wage-labor exchange. For example, women with high levels of education are more likely to work than women with lower levels of education because they may earn more in the paid labor force, or they may have stronger preferences for paid employment. Similarly, women with children are consistently less likely than women without children to work in the paid labor force because of costs (pecuniary or other) associated with the care of young children.

In the comparative approach, women's labor force participation is viewed in relation to the cross-nationally variable institutions that encourage women's employment and provide women with resources to support work and family demands. The cross-national approach does little to account for heterogeneity in labor force involvement within countries as most data analyses focus on aggregate levels of women's employment (for exceptions see Stier et al. 2001 and Gornick et al. 1997). Existing empirical research suggests gender equity is associated with higher rates of female employment, and that a number of specific institutional policies, loosely coupled with overall welfare state development, influence the employment of women and mothers.

In this paper we examine whether and how the demographic and economic causes of women's employment vary with the national institutional context. Our argument suggests that national institutional arrangements differentiate labor markets affecting the wage-labor exchange for specific subgroups of women, and thus influence the propensity to engage in paid labor. We focus on how family supportive policies (e.g., family leave and public provision of child care) influence the labor market behaviors of women.

We suspect that family supportive policies not only influence the aggregate level of female employment as previous research has indicated, but that policy arrangements influence the labor market behaviors of particular

women. For example, generous family leave policies may be associated with continuous attachment to the labor force after the birth of a child and the costs of leave taking are shared across social and demographic groups. This may be best illustrated if we think about the extreme case of a country that provides no paid maternity leave. If a woman has a child in a setting where there is no paid maternity leave, it is likely that the effects of having the child may be highly variable. If the woman works for a firm that provides paid maternity benefits, she may maintain an attachment to the labor force and return to paid employment after a brief hiatus. In contrast, if the woman works for a firm that does not provide paid leave she may be obligated to return to work to maintain her standard of living, or alternatively, she may leave the workforce entirely. If and when she re-enters the labor force she may work for a different employer, losing any firm-specific capital acquired prior to childbirth. In this scenario the costs of childbirth are highly individualized and stratified. This specification implies that generous maternity leave should be associated with a decline in the effect of the presence of children on women's employment.

The implications of our integrative approach are similar with respect to public provision of child care as well. For example, publicly provided child care may reduce the effect of the presence of children on employment decisions. Structural accounts of women's labor force decisions suggest that the presence of children will be negatively associated with the probability of employment. The presence of children raises the costs associated with women's employment largely because of the need for child care during work hours. Child care may incur pecuniary costs if women pay private care providers to care for their children, or psychic costs if women expect to be able to care for their own children rather than work in the paid labor force. Public provision

of child care socializes the ‘costs’ of children by shifting the financial cost of child care from individual mothers to all workers. In addition, publicly provided child care may reflect societal expectations that children may be adequately cared for by persons other than their own mothers. In either case, we would expect the effect of children on women’s employment would be lessened in countries with greater public provision of child care.

Previous research has used indices that combine paid and unpaid family leave and public child care provision to examine the effects of family supportive policies on the labor market involvement of women (e.g., Gornick, Meyers, and Ross 1997, 1998, Stier et al. 2001). In our analysis, we investigate the utility of thinking about family leave and child care as separate institutional arrangements that may influence the labor market decisions of women.²

²Past research has examined the influence of taxation policies on women’s involvement in the paid labor force (For an excellent discussion of this work in this tradition see Sainsbury 1999). The primary concern in this research is investigating whether and how the tax system penalizes or rewards employment. Sainsbury argues that “the tax system is a crucial nexus of the state, the family, and the market. Through tax regulations the state can privilege certain types of families and provide incentives to enter or leave the labor market” (1999, p.185). Gustaffson’s (1991) research suggests that joint-income tax policies and social security tax ceilings lower the benefit associated with women’s work, particularly in countries where unionization is weak. In contrast, systems of individual taxation with no social security ceilings encourage female employment. We have found little evidence for effects of taxation policy on either overall employment levels or the determinants of employment, so we have elected to remove it from our discussion.

Data and Method

To investigate the cross-national variability in women’s employment we begin with data from the Luxembourg Income Study (LIS). The LIS database is a collection of household income surveys that provide demographic, income, and employment information for 25 member countries. This study utilizes the fourth wave of LIS data collected during the mid-1990s. We analyze micro-level data for 18 countries that have information on demographic and employment information relevant for the study. The countries include: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Russian Federation, Sweden, United Kingdom, and the United States. We include four former socialist countries. We tested the sensitivity of our results to the inclusion of these countries and find no significant differences. Table 1 provides descriptive information about each of the surveys included. We restrict our analysis to adults aged 18-65.³

Table 2 describes the variables used in the study. The dependent variable is employed, which is based on self-reported employment status.⁴ Any respondent that reported any level of employment is coded as employed.

We include individual-level information on respondent age, age-squared, marital status, educational attainment, number of children, the presence of a youngest child age three years or under in the household, and the presence

³We have also conducted analysis for women aged 24-40 and find similar results.

⁴The variable person labor force status (PLFS) was used for all countries, with the exception of Finland. For Finland the variable type of worker (PTYPEWK) was used as a substitute. Those who reported an occupation were coded as employed; the not employed category includes students, retirees, the long-term unemployed, those engaged in household work, and others.

Table 1. Survey Descriptions

Country	Year	Survey Name	N (18-65)
Australia	1994	Australian Income and Housing Survey	10561
Austria	1995	Austrian Microcensus	37925
Belgium	1997	Panel Survey of the Centre for Social Policy	7988
Canada	1994	Survey of Consumer Finances	61931
Czech Republic	1996	Microcensus	46747
Denmark	1995	Income Tax Survey	16996
Finland	1995	Income Distribution Survey	16192
France	1994	Family Budget Survey	18052
Germany	1994	German Social Economic Panel Study	10504
Hungary	1994	Hungarian Household Panel	3438
Italy	1995	The Bank of Italy Survey	16069
Netherlands	1994	Socio-Economic Panel	8341
Norway	1995	Income and Property Distribution Survey	16503
Poland	1995	Household Budget Survey	63414
Russian Federation	1995	Russian Longitudinal Monitoring Survey	6295
Sweden	1995	Income Distribution Survey	19725
United Kingdom	1995	The Family Expenditure Survey	9909
United States	1994	March Current Population Survey	90801

of a youngest child age four to six years in the household. Marital status is coded to one if the respondent was married, and is coded to zero if the respondent was single, cohabiting, separated, divorced, or widowed. Educational attainment is coded into three dummy variables representing low, medium, and high educational attainment.⁵ This classification is the recommended approach for “standardizing” educational attainment across countries with divergent credentialing schematics (Sullivan and Smeeding 1997). The classification of each respondent into the category low, medium, or high is based on the respondent’s relative standing to other respondents in the same country. In general, the categories roughly approximate less than a secondary education, completion of secondary education, and more than a secondary education. To the extent possible, each category contains 33% of a country’s respondents. However, in some cases this standard was violated, such as in the case of Australia where over 50% of respondents reported “no qualification” and thus over half of the sample is in the low education category. Number of children is a count of the number of children in the household under the age of 18. Since number of children is measured at the household level, it is possible that some children are not the respondent’s own children. The presence of a youngest child age three years and under and the presence of a youngest child age four to six years are represented by dummy variables. The omitted category is the presence of a youngest child age seven to seventeen years old. The micro-level analyses are weighted, where possible.⁶

⁵Educational attainment data is not available for the United Kingdom. For the UK age at school leaving is used as a substitute for qualification attainment.

⁶We also tested the effects of an interaction between marital status and number of children. There is evidence of a significant interaction between marital status and number of children on employment in six countries – Austria, Czech Republic, Italy, Poland, UK, and US. We report results from models that do not include an interaction term.

Table 2. Micro-level variable descriptions

Variable	Description
Hours	Dependent variable. Self-reported hours per week spent in employment. Coded to not employed/marginal part-time if the respondent reported 0 to 9 hours. Coded to part-time if the respondent reported 10 to 34 hours. Coded to full-time if the respondent reported 35+ hours.
Employed	Dependent variable. Self-reported employment status. Coded to employed if the respondent reported any form/level of employment. Coded to not employed otherwise.
Age	Age in years
Age squared	Age in years squared
Married	Coded to one if the respondent was married
Low Education	Coded to one if the respondent's highest educational attainment is roughly within the bottom 1/3 of the distribution
Medium Education	Coded to one if the respondent's highest educational attainment is roughly within the mid 1/3 of the distribution
High Education	Coded to one if the respondent's highest educational attainment is roughly within the top 1/3 of the distribution
Number of Children	Number of children in the household under age 18
Youngest Child under 3	Coded to one if child age 0 to 3 in the household
Youngest Child under 6	Coded to one if child age 4 to 6 in the household

Macro-level information on sectoral economic growth, institutional variables, and national-level controls are compiled from several sources. Female employment rates and values for macro-level conditions used in our analysis are shown in Table 3. We gathered information on sectoral economic growth from World Bank Indicators (2001). Our measure for service sector growth indicates the annual growth rate (in 1994) for value added in services based on constant local currency. It includes value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Data for the US were not included in the World Bank Indicators, but were drawn from reports provided by the Bureau of Economic Analysis (2001).

Our analysis includes two measures of policy conditions: maternity leave and public provision of child care. Maternity and parental leave are very important aspects of family policy hypothesized to influence women's involvement in the paid labor force. Unfortunately, exactly how to conceptualize maternity leave vis à vis parental leave is a thorny problem, made especially difficult when thinking about measuring cross-national variation in family leave policies. There are a number of comparative studies of family leave policies (e.g., Gauthier 1996; Gornick et al. 1997; Hantrais 1997; UN 1995; OECD 2001; Gauthier Forthcoming), and there is a great deal of consistency in reports of maternity leave benefits – both weeks of leave and wage replacement, particularly in the mid-1990s. The measure we have adopted for our study most closely resembles that reported by the UN (1995) and represents the number of maternity leave weeks measured in 1994.

Our measure differs from the UN reports in the cases of Australia and the US. Australian women who work for the government receive paid maternity

leave (approximately 17% of the female workforce). However, Australia lacks national, paid, statutory leave. Recent (1994) legislation provides unpaid leaves of up to 52 weeks for child care of a newborn or adopted child in Australia. The US also has no national paid maternity leave policy. Five states provide maternity leave as part of mandatory disability insurance (California, Hawaii, New Jersey, New York, and Rhode Island). The Family and Medical Leave Act (FMLA), enacted in 1993, provides for job-protected leaves of up to 12 weeks for employees in firms with 50 or more employees. Because there is no national system of paid maternity leave in the US and Australia, we classify these countries as having 0 weeks of maternity leave. Data for the Czech Republic were taken from OECD sources (OECD 2001). Table 3 also shows the wage replacement rate during leave.

Our measure of maternity leave weeks indicates relatively short maternity leave benefits for women in social democratic countries (e.g., Sweden and Finland) compared to measures used elsewhere (e.g., Gornick et al. 1997, Gauthier 1996). The measure that we use represents the portion of parental leave reserved for women as maternity leave. We tested the sensitivity of our results to different measures of family leave including weeks of maternity leave, weeks of parental leave, wage replacement rates, and coverage rates (Gornick et al. 1997). Despite differences in the extent of family leave policies across sources (particularly among social democratic countries), we find no statistically significant difference in the effects of available measures on employment patterns of women.

Compulsory education begins in most countries when children are between 4-8, though in most places children are involved in full-day educational programs by age 6. The measure of child care we have adopted represents the percentage of children 0-3 in publicly funded child care in the early 1990s.

Our measure of publicly supported child care is drawn from several sources. Most of the data come from Gauthier (1996), though data on Australia, Canada, Norway, and the UK come from Gornick and Meyers (2000). Child Care coverage for Eastern European countries come from other sources. Data for Hungary, Poland, and Russia are from 1989 and come from UNICEF (1999). Data for the Czech Republic and Austria are also from 1989 and are taken from OECD sources (OECD 2001).

We also include several national-level controls in our analyses. To control for overall economic climate we include a measure of annual national unemployment (The World Bank 2001). To control for the status of women we include an indicator of the percentage of parliamentary seats occupied by women (The World's Women 1995).⁷

Using these data, we conduct a multi-level analysis of women's employment. Our argument suggests that the propensity of women to join the paid labor force is related to economic and demographic variables and labor market conditions. We suspect that these effects may vary across countries in ways that depend on institutional arrangements. Political and labor market conditions may also have direct effects on the level of female employment.

⁷In addition to these, we tested other measures of institutional context and national controls on women's employment. We constructed a measure of the tax "penalty" associated with women's employment using information on effective tax rates in 1996 from the OECD (1997). We collected information on the marginal tax rate for a married couple with 2 children, one-earner earning 100% of the average production worker's wage. We also collected information on the marginal tax rate for a married couple with 2 children, two-earners, with one earning 100% of the average production worker's wage and the other earning 33%. Our penalty measure is the percentage increase in the marginal tax rate associated with a second earner. We also included a control for GDP growth (The World Bank 2001).

Table 3. Female Employment Rates and Macro-level conditions

	Female Employment	Service Sector Growth	Weeks Maternity Leave	Leave Wage Replacement	Publicly Funded Child Care	Women in Parliament
AU	59.21	6.42	0	0	5	8
AS	53.6	1.97	16	100	3	21
BE	48.49	2.25	15	82	30	9
CA	62.59	4.43	15	57	5	18
CZ	62.66	2.09	28	69	20	10
DE	68.59	4.71	18	100	50	33
FI	58.77	1.96	15	80	27	39
FR	55.78	1.73	16	84	23	6
GE	54.88	2.08	14	100	4	21
HU	50.19	1.9	24	100	12	11
IT	39.18	1.58	20	80	6	15
NE	54.99	2.8	16	100	8	31
NO	65.42	4.64	18	100	20	39
PO	45.2	4.62	16	100	9	13
RU	58.33	-0.07	20	100	37	10
SW	75.5	2.18	12	90	33	34
UK	63.35	4.68	14	90	2	9
US	67.21	2.75	0	0	2	11

We estimate a multi-level model using two sets of regression equations. First, using logistic regression, we model the probability that a woman will be employed in the paid labor force as a function of economic and demographic characteristics. We estimate separate equations for each country, which allows the relationship between female employment and economic and demographic variables to vary by country. Second, we treat the coefficients from country-level equations as dependent variables in an OLS regression including national characteristics as independent variables. We explore how measures of sectoral economic growth, maternity leave, publicly supported child care, gender equality, and unemployment influence economic and demographic covariates of women's employment. We estimate these methods using the variance-known procedure in HLM (Bryk and Raudenbush 1992). This procedure allows us to estimate random effects for the macro conditions using two-step methodology, while taking account of the covariance structure of the micro-level models.⁸

Results

Results from single-country micro-level regression models show considerable support for supply and demand explanations for women's involvement in the paid labor force. Table 4 shows the mean effect sizes from the single-country micro-level regression models of employment.⁹ Women with the greatest expected returns to participation in the paid labor force are more likely to be working than otherwise similar women. For example, increased education

⁸There is potentially an efficiency trade-off using the two-step process, but because of the restrictive nature of the LIS data, we must estimate the model using the v-known procedure.

⁹Country-level regression results for each country are shown in Appendix 1.

Table 4. Mean effect sizes for micro-parameters. (Absolute t-statistics in parentheses)

Coefficient	Mean effect
Age	0.405 (16.037)
Age squared	-0.005 (17.473)
Married	0.045 (0.978)
Medium Education	0.612 (10.122)
High Education	1.213 (16.541)
Children	-0.295 (12.659)
Youngest Child 0–3	-0.989 (6.359)
Youngest Child 4–6	-0.374 (5.107)
Intercept	-6.498 (14.069)

is consistently associated with an increased probability of paid employment. Across all countries, women with medium levels of education (in the medium one-third of the distribution) are more likely than less-educated women (in the bottom one-third of the education distribution) to be employed in the paid labor force. Women with high levels of education (in the top one-third of the distribution) are more likely to be employed than less educated women.

As neoclassical economic theory would predict, childbearing is typically associated with declines in the probability of employment. Having children is negatively associated with the probability of employment. In addition, the probability of employment declines with the presence of young children. Women living with children under age 3 are less likely than comparable women to be employed; a similar effect is found for women whose youngest

child is between 4 and 6.

The theoretical interpretation of some other effects are less clear, however. For example, on average there is not a significant effect of marriage on the employment of women; there is a great deal of variation across countries in the effect of marriage on women's employment. Being married is negatively associated with the probability of employment in Austria, Belgium, France, Germany, Italy, Netherlands, Poland, Russia, and the US. Marriage is positively associated with the probability of employment in the Scandinavian countries, Canada, and the UK. In fact, even where micro-level effects are consistent in sign across countries, they may vary widely.

Initial tests indicate that there is sufficient variation across the parameter estimates to warrant further investigation. HLM estimates (chi-square tests) indicate that all of the beta coefficients (including the intercept) vary significantly across countries. Our next step, then, is to try to model what explains the variance across countries. Table 5 reports selected results from multi-level models that test the effects of sectoral economic growth, institutional variables, and national controls on the micro-level parameter estimates.

Results from Table 5 provide some additional support for structural explanations for patterns of women's work, but they also show that institutional conditions influence the employment of particular women in predictable ways. The country-level intercepts represent the log odds of employment among the reference group (0 aged unmarried women with low-education and no children). The intercepts are moderately correlated with measured levels of women's employment. We suggest that they provide an indication of the comparative level of women's employment after adjusting for economic and demographic characteristics of the population. Thus, the effects of macro-level conditions on the country-level intercepts can be interpreted as the

Table 5. Estimates of fixed effects for selected micro-parameters. (Absolute t-statistics in parentheses)

Macro-predictors	Endogenous Microparameters			
	Intercept	High Education	Married	Children
Intercept	-2.3012 (0.848)	0.6527 (1.085)	-0.6236 (2.119)	-0.3656 (2.771)
Service Sector Growth	0.5673 (1.493)	0.0560 (0.664)	0.1006 (2.402)	0.0122 (0.647)
Weeks Maternity Leave	-0.2092 (2.294)	0.0115 (0.567)	-0.0029 (0.288)	-0.0035 (0.781)
Percent children 0-2 in publicly funded care*	0.5648 (0.131)	0.2363 (0.247)	0.9356 (1.952)	0.3478 (1.590)
Percent women in lower parliament*	-0.3807 (0.074)	-0.3600 (0.315)	0.9462 (1.645)	0.0612 (0.237)
Unemployment	-0.3130 (1.935)	0.0164 (0.458)	0.0098 (0.557)	0.0009 (0.113)

* Coefficients are multiplied by 100

relationship between those conditions and the general level of women’s employment in a country. Results from the intercept model (Column 1) indicate that growth in the service sector is associated with higher rates of female employment. That is, growth in the service sector is associated with higher levels of women’s employment net the effects of social and demographic characteristics. As expected, the unemployment rate is negatively associated with the overall level of women’s employment. In countries where economic conditions are relatively favorable, as indicated by low unemployment, women are more likely to be employed than under less favorable economic conditions.

Service sector growth also affects the estimates of micro-level economic and demographic characteristics on women’s employment. The second row of Table 5 shows the effect of service sector growth on variation in the effects of education, marital status, and the presence of children on women’s employment. Service sector growth is positively related to the effect of marriage

on employment. That is, the effect of marriage on employment is more positive in countries with strong growth in the service sector. This effect may indicate increased demand in sectors that typically employ women so women who might not otherwise be employed, are employed.

The employment patterns of women are also influenced by institutional conditions. Public policies designed to support the employment of women and mothers influence both the overall level of women's employment and the effects of social and demographic conditions on women's employment in interesting ways. There is a somewhat curious negative effect of weeks maternity leave on the overall level of women's employment. Previous examinations of cross-national variation in women's employment have often noted a correspondence between high rates of female employment and generous maternity and family leave benefits (e.g., Gornick et al. 1997). A recent examination of welfare state development argues that high levels of state spending on family leave benefits is associated with high levels of female employment (Huber and Stephens 2000). However, as maternity and parental leave have become increasingly generous in many European countries, scholars have begun to consider the possibility that extended leaves (of 2 or 3 years) may discourage women from returning to the paid labor force because of significant losses in human or social capital. We suspect that the negative relationship between maternity leave and women's employment demonstrated here more likely stems from the fact that many European countries support generous family leave even where women's employment is, and has historically been, low. These data can not distinguish whether taking extended leave negatively influences women's employment over the life course, but there is little evidence from these analyses that the negative effect of generous maternity leave is relegated to the employment experiences of women with children. How-

ever, future research should investigate the effects of extended leave-taking on employment decisions over the life course.

Results from Table 5 also indicate that publicly funded child care is associated with an increased likelihood of employment among both married women and women with children. Results indicate that differences in employment among married women and women with and without children tend to shrink with higher levels of publicly funded child care. For example, women with children are more likely to be employed (relative to women without children) in countries with higher levels of publicly supported child care for young children (0-2). This suggests that public provision of child care for young children enables the employment of mothers with children (not only mothers with young children).

Finally, our results also indicate support for previous assertions that female employment is related to overall patterns of gender equity in society. Our results show that the percentage of women in parliament is positively associated with employment among married women.

Discussion

This paper examines the structure of women’s labor force participation in comparative perspective. Using the most recent available data from 18 advanced industrialized countries and multi-level methods, we are able to quantify the importance of economic and demographic forces on women’s employment across different institutional contexts.

Our results indicate that there is much consistency in the direction of micro-level parameters on women’s employment. For example, higher educated women are nearly always more likely to work in the paid labor force compared with women with lower levels of education. Further, in every coun-

try, the presence of children is negatively associated with the probability of women's employment. Our research also suggests that macro-level economic conditions affect the level of female employment. Cross-national variation in economic growth in the service sector influences the overall level of women's involvement in the paid labor force (shown in the intercept model). Finally, we show that institutional conditions affect the relationship between economic and demographic characteristics and employment. Publicly funded child care influences the effect of marriage and the presence of children on the employment of women.

This research has both theoretical and methodological implications for our understanding of the employment patterns of women across institutional contexts. From a theoretical standpoint, this research suggests that labor markets are not generic forums of wage labor exchange. Instead, we suggest that employment decisions of women, and particularly mothers, are influenced by policy context that affects the terms of the exchange. We model this relationship explicitly using a multi-level modeling framework. Thus, we are able to specify the mechanism through which policy variation influences women's employment. The provision of publicly funded child care influences specifically the probability of employment of women with children. The effects of child care provision are not limited to the employment rates of women with young children. Consequently, we suspect that child care provision during early childhood enables women to maintain continuous attachment to the paid labor force that has implications on their labor market experiences later in life.

From a methodological standpoint, this research synthesizes both structural and institutional explanations for women's employment in a multi-level modeling framework. Much previous comparative work has been concerned

with the level of women's employment across countries. By incorporating information about heterogeneity in employment both within countries and across countries, we are able to investigate the causal mechanisms about why and for whom institutions matter for employment decisions. Our findings are consistent with other work that has investigated women's labor force participation and concluded that institutional structures matter, but our findings suggest that institutional conditions affect the labor market behavior of particular women.

These results suggest a number of avenues of further research. First, much variation in the covariates of employment remains unexplained. Future research should further investigate the role of social and political organizations (e.g., unions, women's movements) on the determinants of women's employment. Second, future research should investigate the relative importance of structural and institutional conditions on women's involvement in part-time work, occupational sector, and earnings. Unfortunately the LIS database has limited information on part-time employment and is not well-suited for such an examination using the full complement of countries. Our initial research suggests that a more thorough accounting of the relationship between structural and institutional determinants of women's labor force participation is necessary for our understanding of cross-national variation in women's economic progress.

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Appendix Table 1. Micro-level regression coefficients

Country	Age	Age squared	Married	Medium Education	High Education	Children	Child 0-3	Child 4-6	Intercept
AU	0.231	-0.004	0.222	0.512	1.057	-0.297	-1.341	-0.838	-2.578
AS	0.384	-0.005	-0.440	0.386	0.336	-0.317	-1.188	-0.386	-5.306
BE	0.343	-0.005	-0.053	0.994	1.839	-0.354	0.015	0.233	-5.667
CA	0.259	-0.004	0.217	0.838	1.168	-0.178	-0.628	-0.504	-4.262
CZ	0.717	-0.009	-0.001	0.280	0.849	-0.397	-2.793	-1.055	-11.119
DE	0.272	-0.004	0.507	0.856	1.376	-0.113	-0.682	-0.409	-3.701
FN	0.555	-0.007	0.459	0.455	0.775	-0.221	-1.301	-0.121	-10.092
FR	0.559	-0.007	-0.204	0.669	0.585	-0.427	-0.018	0.069	-9.570
GE	0.485	-0.006	-0.239	0.068	0.818	-0.567	-1.207	-0.220	-7.920
HU	0.443	-0.006	0.034	1.109	2.138	-0.281	-2.233	-0.152	-7.456
IT	0.502	-0.006	-0.269	1.095	1.617	-0.360	0.237	0.214	-10.116
NE	0.228	-0.004	-0.134	0.634	1.431	-0.350	-0.707	-0.442	-2.500
NO	0.443	-0.005	0.326	0.867	1.098	-0.337	0.269	-0.086	-8.068
PO	0.541	-0.007	-0.190	0.317	1.091	-0.246	-0.533	-0.132	-9.581
RU	0.501	-0.006	-0.270	0.496	0.721	-0.176	-0.875	0.345	-8.247
SW	0.405	-0.005	0.637	0.918	1.149	-0.306	0.431	0.115	-7.276
UK	0.281	-0.004	0.430	0.382	1.006	-0.422	-1.392	-0.782	-3.729
US	0.217	-0.003	-0.137	0.759	1.179	-0.212	-0.542	-0.268	-3.224