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The Motherhood Penalty in Cross-National Perspective:
The Importance of Work-Family Policies and Cultural Attitudes

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Mothers' employment and earnings partly depend on social policies and cultural norms supporting work-family balance. While policies regarding parental leave and childcare may assist families in combining work and care, are these policies related to the economic penalties for motherhood? Using original social policy data with micro data from the Luxembourg Income Study, we examine relationships between specific policies and the motherhood earnings penalty. We consider how penalties vary across 22 countries, and how particular social policies link to motherhood penalties. Using data from the ISSP, we also show motherhood penalties are smaller where cultural attitudes supporting maternal employment are stronger.

Work-family policies lie at the heart of the major expansions of the welfare state during the last two decades. These expansions do not simply reflect an interest reducing gender inequality, but also efforts to increase both fertility and employment rates, particularly among women in European countries. Yet despite increased employment of mothers, their wages continue to lag behind those of fathers, even as the wage gaps between childless men and women have declined in recent years (Waldfogel 1998b). The negative effects of children on mothers' wages is well documented, and appears to vary significantly cross-nationally (Budig and England 2001; Harkness and Waldfogel 2003; Author 2007a; Sigle-Rushton and Waldfogel 2004). We seek to understand how specific social policies and cultural understandings of men's and women's roles are linked to these cross-national motherhood penalties. We argue that distinct work-family policies reflect different gendered assumptions about the roles and responsibilities of mothers. As a result, different policies have varying effects on the wage penalty.

The effects of particular work-family policies on women's labor market outcomes are unclear. On the one hand, many scholars contend that work-family policies increase women's employment and wages, by helping them balance the demands of both family and work (Daly 2000; Esping-Andersen 1999; Gornick and Meyers 2003; Korpi 2000). These scholars tend to view work-family policies as an unmitigated good for women's economic equality. Yet, Mandel and Semyonov (2005, p. 950; 2006) argue that work-family policies have paradoxical effects on women's economic outcomes, suggesting that work-family policies may increase gender gaps in earnings, because "family policies, while providing women with better opportunities to join the labor force and enhancing their economic independence, also limit their occupational opportunities and earnings capacity."

A shortcoming of this literature is its tendency to treat family policies as monolithically "good" or "bad" for gender pay gaps. Work-family policies are diverse, and some policies, such as extended parental leaves, may have markedly different effects on maternal employment and earnings than other policies, such as high quality publicly subsidized childcare. Despite this diversity, scholars typically subsume an array of policies into an overall index to assess their impact on employment and earnings (Gornick and Meyers 2003; Mandel and Semyonov 2005). We separate these policies, and also explore cultural attitudes that may be consistent or disharmonious with these policies, to examine the countervailing effects of family policies and cultural attitudes on the motherhood wage penalty. Specifically, we examine the differential effects of maternity and parental leaves as well as publicly funded childcare for very young (0 to 2 years) and for older (3 to 5 years) children. We use our Family Policy Database[1], and the data from the Luxembourg Income Study (LIS), which provides the best cross-national data for comparing income across OECD countries (OECD 1995).

Previous analyses of cross-national gender wage gaps have also not always fully considered the substantial variation in women's employment rates cross-nationally. Just as the presence and size of wage gaps by gender and motherhood vary significantly cross-nationally, so do the employment rates of women, especially mothers. However, wage and employment disparities do not correlate in simple ways. Among countries with relatively small or no wage gaps, there is wide variation in the employment rates of women and mothers. In countries with few women in the labor market, low motherhood gaps may not signal the same outcome as low wage gaps in countries with high levels women's employment. Where women are underrepresented in the labor market, those who are employed may be more likely to earn well, for example, women with high levels of education. In these contexts, low wage gaps may mask

greater inequality among women. In contrast, countries with high female employment but small wage gaps may have a greater diversity of women workers; thus in these contexts, low wage gaps may suggest greater equality for most women. Our analysis considers how these different outcomes are linked, and what this suggests about women's equality more broadly.

To address cross-national variation in women's labor force participation, we use calculate predicted employment probabilities of mothers, fathers as well as childless women and men, while controlling for other factors that might shape employment such as age, education, marital/cohabitating status, and other household income. We examine whether there is any association between wage penalties and employment probabilities, and consider how these associations may shed light on wage penalties to mothers.

Finally, we also consider how countries' cultural norms and preferences concerning women's best practices in combining paid and unpaid work may shape motherhood earnings gaps (Pfau-Effinger 1998, 2004; Kremer 2005). It is reasonable to think that family policies may alter the socio-political norms regarding employment among mothers, which, in turn, may change women's own preferences and thereby affect the motherhood penalty. Hook (2006) makes a similar argument about the impact of social policies influencing normative gendered behaviors. In addition to policies changing preferences, pre-existing cultural expectations concerning the appropriateness of mothers' employment may shape policy formation. Moreover, the two processes may be disharmonious. Cultural norms can change before social policies are enacted, or, as critics of "social engineering" claim, policies may attempt to change prevailing cultural understandings. To consider this second, and possibly contradictory, process, we use data from the ISSP to examine country-level differences in norms and preferences for women's engagement in

4

paid and unpaid labor. We correlate these indicators with the net motherhood wage penalties estimated in each country to examine the extent to which penalties are linked to culture.

We ask: How do motherhood wage penalties vary across countries? How are societal-level factors linked to these penalties, taking into account individual-level differences among women? The cross-national variation in both policies and motherhood penalties provides an excellent opportunity to learn how particular policies are related to mothers' wages.

Motherhood Earnings Penalties

Across industrialized countries, women's employment, particularly among married mothers, has risen dramatically over the past 40 years, while men's employment remains high. Consequently, families face serious work-family conflicts and mothers in many countries earn less than women without children (Budig and England 2001; Harkness and Waldfogel 2003; Sigle-Rushton and Waldfogel 2004). Motherhood wage penalties occur in the U.S. (Anderson, Binder, and Krause 2003; Avellar and Smock 2003; Budig and England 2001; Lundberg and Rose 2000; Waldfogel 1997, 1998a, 1998b), the U.K. (Davies and Pierre 2005; Harkness and Waldfogel 2003; Joshi and Newell 1989; Joshi, Pierella, and Waldfogel 1999; Waldfogel 1997, 1998b), Austria, Canada, Germany, Finland and Sweden (Davies and Pierre 2005; Harkness and Waldfogel 2003), and Denmark, Spain, and Portugal (Davies and Pierre 2005). Previous cross-national work suggests substantial variations in the size of this penalty (Davies and Pierre 2005; Harkness and Waldfogel 2003; Author 2007a), but this research, based on small numbers of countries, does not directly examine the association of between motherhood earnings penalties and particular social policies.

Work-family policies include paid or unpaid parental and family leave and subsidized or state-provided childcare (Gornick and Meyers 2003; Hantrais 2000). While scholars and advocates

call for stronger work-family policies in the U.S., we know little about how individual policies relate to mothers' employment and wages. While some scholars argue these policies increase parental flexibility and maternal employment and wages, others suggest that these policies may limit women's labor market opportunities and employment outcomes (Mandel and Semyonov 2005, 2006). A handful of studies examine the effects of these policies on women's employment or the gender gap in wages, but the effects of these policies on the *motherhood penalty* remains under-explored. Yet, while some work-family policies – particularly paternity leave and childcare – may address gender inequality, all family policies directly address differences among women by maternal status. Therefore, carefully considering how these policies are associated – or not associated – with the motherhood penalty is an important next step.

Theoretical Context

Motherhood wage penalties are shaped by differences in which women become mothers, and differences in which women enter the workforce, as well as the characteristics of working women, opportunities for maternal employment, and public support for managing care responsibilities. We must first understand how individual-level factors shape the motherhood penalty in each nation in order to identify next the areas where social policies could significantly impact that country's penalty. Moreover, in order to investigate the relationship of current policies with the size of the motherhood penalty, we must account for individual-level factors that are known to affect this penalty.

Past research shows how individual-level factors contribute to the motherhood penalty (Anderson et al. 2003; Avellar and Smock 2003; Budig and England 2001; Lundberg and Rose 2000; Sigle-Rushton and Waldfogel 2004; Waldfogel 1998a and b); Budig and England (2001) estimate that American mothers earn 7 percent less per child. Possible explanations for this

unexplained penalty among American mothers include employer discrimination, reduced human capital and work effort, workplace compensating differentials, differences in family composition, and negative selectivity into motherhood.

For example, experimental research demonstrates *employer discrimination* in the hiring and wage setting of job applicants who signal motherhood on their resumes (Correll, Benard, and Paik 2007), relative to those who do not. The motherhood penalty is also partially explained by differences in *human capital*. Mothers who interrupt their employment to accommodate childcare have less experience and seniority (Gangl and Ziefle 2009; Klerman and Liebowitz 1999). The motherhood penalty varies by educational attainment (Andersen et al. 2003). Mother's lower *labor supply*, measured as hours worked or part-time status, explains an additional portion of this penalty (Budig and England 2001; Gangl and Ziefle 2009; Waldfogel 1997), but a significant penalty remains even after controls for experience and labor supply are added.

Research examining whether mothers trade family-friendly workplace characteristics as compensating differentials for lower wages shows mixed results. German evidence indicates that mothers sort into lower-paying or lower wage-growth establishments prior to having children (Beblo, Bender, and Wolf 2008). In the U.K. and U.S., Gangl and Ziefle (2009) claim motherhood wage penalties can be explained by mothers' shifts into jobs with potentially more family-friendly characteristics.[2] However, with the exception of mothers moving into part-time work, Budig and England (2001) find little evidence supporting the family-friendly compensating differentials argument. In this paper, although we control for part-time status in our analyses, the LIS data lack detailed measures on employers and workplaces, though we suspect both are influenced by the work-family policy contexts that we do measure.

In addition to worker and workplace characteristics, the motherhood penalty varies by *family structure*. Budig and England (2001) find that married women incur larger penalties for motherhood. Cross-nationally, married women do not always suffer the largest motherhood penalties.[3] Comparative work shows that in certain contexts, motherhood penalties are largest for single women, while in other countries there is no difference between single and married mothers (Gangl and Ziefle 2009; Author 2007a).

Finally, the motherhood penalty may result from unmeasured self-selection into motherhood and employment on factors that influence earnings. To control for within-country selection processes, we use two-stage Heckman selection models (described in the methods section).

While the characteristics and choices of mothers explain some of their wage penalty, a significant portion of the wage penalty cannot be explained by individual-level factors (Budig and England 2001; Harkness and Waldfogel 2003). Moreover, what we measure as "individual-level" factors may be profoundly shaped by family policies in a cross-national context.[4] Scholars assume that family-work reconciliation policies broadly are positively related to outcomes such as wages, but have not analyzed how specific policies, or different groups of policies, are associated with employment outcomes. While recent cross-national work examines the effects of motherhood on earnings (Gornick and Meyers 2003; Harkness and Waldfogel 2003; Author 2007a), virtually no research measures the impact of specific social policies on the motherhood penalty.[5] Cross-national research that quantifies policy effects examines gender wage inequalities and women's employment, but not inequality by motherhood status (Mandel and Semyonov 2005; Pettit and Hook 2005).

What policies may influence the motherhood wage penalty? Following previous research, we identify at least two major groups of policies that may influence parents' abilities to combine work and care: maternity/paternity leaves surrounding the birth of a child and extended parental care leave policies during the child's preschool years; and childcare policies for very young (0 to 2 year-olds) and older (3 to 5 year-olds) children (Evans 2002; Gauthier and Bortnik 2001; Gornick and Meyers 2003; Jaumotte 2003; Morgan and Zippel 2003; Pettit and Hook 2005). While many policies may affect parental employment and wages, these work-family reconciliation policies target the pressures families face in balancing care and employment. Indeed, these policies appear to be strongly associated with higher levels of women's employment (Gornick and Meyers 2003; Pettit and Hook 2005) – though their associations with motherhood wage penalties have not been directly tested.

Leave policies (i.e., maternity, paternity, and parental leave) are meant to support parental caregiving, while enabling employment continuity. The level of wage replacement, the length of leave, and how many workers are eligible are all dimensions that may shape the impact of leave on mothers' ability to remain employed and subsequently, on wages. Leave policies may have oppositional associations with the wage penalty. For example, long maternity and parental leaves could decrease women's employment continuity and earnings (Buligescu, Crombrugghe, Mentesoglu and Montizaan 2008; Morgan and Zippel 2003; Pettit and Hook 2005), while ensuring that women remain "on the hook" for care (Bergmann 1998, 2001). At the same time, short paid leaves may help mothers maintain labor force attachment. Indeed, studies show curvilinear effects of leave length on women's employment outcomes and poverty (Pettit and Hook 2005; Kenworthy forthcoming; Evertsson and Duvander 2006; Author 2007b). This work leads us to predictions regarding the effects of leave:

9

1. Weeks of paid maternity leave should increase women's employment upon motherhood. But this does not necessarily imply smaller motherhood wage penalties. In countries that lack leave policies, mothers may be forced out of the labor market when their children are small. Thus, the wage gap between the selective groups of mothers who remain employed and the non-mothers may be smaller than the gap between these groups in generous leave countries where mothers are able to maintain employment.[6]

2. Short parental leaves (<1 yr.) should decrease the motherhood penalty by enabling employment continuity. In contrast, longer leaves (e.g., one to three years) should increase the wage penalties to mothers, insofar as the leave reduces mothers' labor force attachment. We predict a curvilinear relationship between weeks of parental leave and the motherhood wage penalty.

Childcare policies should also impact mothers' earnings. While childcare programs were adopted both to provide education and to support parents' employment, these programs – particularly those for children under 3 – are explicitly recognized as helping families balancing care and employment (Gornick and Meyers 2003; Kamerman and Kahn 1991). Indeed, childcare costs have strong effects on women's employment; Han and Waldfogel (2002) argue that in the U.S., reducing childcare costs could substantially raise employment of both married and single mothers. Cross-nationally, Pettit and Hook (2005), show that high levels of childcare positively affect women's labor market participation. This leads us to predict:

3. State-provided or -subsidized childcare, measured as percentage of children in state-supported care, should decrease the wage penalty by allowing mothers the opportunity to engage in paid employment (McDonald 2000). We use separate measures for enrolment of infants (aged 0 to 2) and enrolment of preschoolers (aged 3 to 6).

All of this discussion about how policies may affect the motherhood wage penalty depends, in part, on mothers being in the labor force and earning wages. But policies (or lack thereof) may generate large cross-national differences in maternal employment rates.[7] While our Heckman selection models attempt to reduce the effect of labor market selection that could influence the motherhood wage penalty, they may be inadequate in addressing large cross-national differences in these selection processes. Thus, before we turn to an analysis of wages, we examine the probabilities of maternal employment across countries, and we include these probabilities in our contextual analysis of cross-national variation in the motherhood wage penalty.

Cultural Attitudes. Country differences in cultural and normative supports for mothers' paid employment, particularly when children are young, may also be important. While social policies may be the result, or cause, of changing cultural norms around mothers' engagement in employment, it is likely that policies and cultural norms are not completely in synch. As Pfau-Effinger (1998, 2004), argues, policies do not shape employment choices in a vacuum, instead policies interact with culture to influence women's (and men's) choices about managing work and family. This points to the importance of examining how cultural norms about mothers' employment are linked to the wage penalty mothers incur within country.

While the literature on the relationships between culture and policies is less developed, we cannot ignore the role of culture in the shaping of welfare state policies. For example, Kremer (2005) suggests that welfare states promote certain "ideals of care," which defines good care and good caregivers, and these ideals are embedded in the welfare state policies. Focusing on gender and employment, Pfau-Effinger (1998, 2004) argues three dimensions affect women's employment: The *gender culture* (values regarding work, care, and gender), the *gender order*

11

(welfare and labor market policies, which reinforce the gender culture), and the *gender arrangement* (the division of labor within families). Pfau-Effinger (2004) considers changes in cultural traditions interact with social institutions – including the welfare state, labor market, and family – to shape women's employment. Thus, while policies may be enacted to support mothers' employment or reduce discrimination against mothers by employers (gender order) if these are not in synch with the gender culture, we may see wage penalties persist in the face of generous policies. This leads us to predict:

4. In countries where social values supporting maternal employment are positive, motherhood wage penalties should be smaller. We use separate measures of level of support for maternal full-time employment when children are preschool aged versus school aged.

5. Where maternal employment is viewed as harmful to children, we should expect to see greater wage penalties to motherhood. We use an indicator of level of agreement that preschool children are harmed if mothers work.

Of course, cross-national differences may result from multiple factors, including cultural differences shaping women's preferences, and earnings inequality. To minimize the effects of contextual variations, we focus on differences between mothers and women without children within each country. The patterns of women without children should indicate baseline preferences and opportunities, and the degree to which mothers differ should capture the impact of institutions and policies on women's ability to balance employment and family responsibilities. All in all, we fill a gap in the literature by assessing relationships between childcare provision, family leave, and cultural support for maternal employment and the motherhood penalty. [8]

Research Design

Our study uses data from multiple sources. Microdata come from the LIS, an excellent source of secondary cross-national survey data on households, income (including transfer income), and employment. These individual-level data come from a range of national surveys indicated in Table 1. Analyses use Wave 4 and Wave 5 (representing the 1990s and early 2000s) of the LIS data for 22 countries. For all countries, the sample is restricted to employed adult women, age 25 to 49 (prime years for childrearing), who are not in the military.[9] Table 1 presents the sample sizes before and after we apply our sample restrictions.

Before fitting the wage models we first estimate the probabilities of employment and of full-time employment across countries using logistic regression with dichotomous measures for employment as the dependent variable.[10] To estimate the probability of employment, we use the full sample of women. To estimate the probability of full-time employment we subsequently limit the sample to employed persons only.

Our primary analyses focus on the wage models, where the dependent variable is the natural log of annual earnings; each national currency is first transformed into constant 2000 U.S. dollars. Using logged earnings enables us to minimize the effect of outliers and interpret coefficients in a straightforward manner: multiplying the coefficient by $100*(e^b-1)$ gives us the percent change in earnings, given a 1-unit increase in the independent variable.[11]

Cross-national differences in the motherhood penalty could result from differential selection of women into employment across countries. To control for this, we employ a two-stage Heckman sample selection correction estimation procedure where high educational attainment (post-secondary education or occupational training leading to certification), transfer

income, other household wage income (household wages minus the respondent's wages), and presence of a preschooler comprise our selection criteria.

Individual-level independent variables include human capital and labor supply, job characteristics, family composition, and demographic characteristics. Human capital measures include educational attainment measured with a dummy variable=1 to indicate post-secondary education or occupational training leading to certification. We use respondent's age as a proxy for labor market experience.[12] Labor supply is measured using a dummy variable indicating full-time status, i.e. 30 or more weekly working hours[13] Family characteristics include whether the respondent has children living at home (mother=1) and marital status (married/cohabiting=1, otherwise=0). [14]

We compiled a country-level social policy database, structured after those developed by Gornick and Meyers (2003), Gornick, Meyers, and Ross (1997), Gauthier and Bortnik (2001), and Jaumotte (2003). Our database includes 22 countries: Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, East Germany[15], West Germany, Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Poland, Russia, the Slovak Republic, Spain, Sweden, the United Kingdom, and the United States. With a few exceptions, the survey data was collected in or around the year 2000.[16] We match our policies measures to the LIS survey year for each country, lagging the measurement of the leave policies to two years prior to the survey year.[17] Policy dimensions include maternity/paternity leave, parental care leaves, and childcare. Although there are a number of family policy datasets in existence, none are as comprehensive as our database.

Following predecessors (Gauthier and Bortnik 2001; Gornick and Meyers 2003; Waldfogel 1998a), we include policy measures (e.g., number of weeks and benefits levels), and policy usage.[18] Childcare policy includes the percentage of children age 0-2 and the percentage of

children age 3-5 in publicly funded care. Leave measures include the number of weeks of paid maternity, paternity, and parental leave (paid and unpaid), along with the percentage of wages replaced.

We use several measures from "Family and Changing Gender Roles" modules (1994 and 2002) of the International Social Survey Program (ISSP).[19] We match ISSP items from the survey year closest to the LIS survey year.[20] Specifically, we use items measuring cultural attitudes towards mothers' full-time employment when the youngest child in the family is either of pre-school or of school-age, and the degree to which young children are thought to suffer if mothers engage in paid employment.[21]

Our analysis aims to 1) document and compare the extent of the motherhood wage penalty across twenty-two countries, with an eye toward understanding how much self-selection and individual-level controls account for these penalties, 2) consider how country variation in the motherhood penalty may depend upon the level of maternal employment across countries and 3) examine how policies and cultural norms are associated with the motherhood penalty, net of individual-level controls.

Findings

Employment Participation and Wages

Table Two presents the predicted probabilities of any (or full-time) employment for mothers and for childless women. These probabilities derive from separate logistic regression models that control for age, education, and other household income (and its square) to predict employment and then, restricting the sample to the employed, predict full-time hours.

[Table Two About Here]

15

This table indicates the effect of motherhood on the likelihood of any employment and on full-time employment, net of other factors. The difference in the probabilities is presented in the "gap" columns. In terms of employment participation, mothers are far less likely to be in the labor market in Ireland, West Germany, Australia, Italy, Spain, and the UK. If the women who are most likely to incur the motherhood penalty are excluded from the labor market in these countries, we may expect to find smaller wage penalties in these countries. Conversely, we see gaps in employment minimized in Russia (where mothers have higher employment rates), Sweden, Poland, the US, and Belgium. That mothers are almost as likely to be in the labor market in some countries is only part of the story, however. We argue that understanding these different cross-national probabilities of women's and mothers' employment (controlling for individual level factors that might shape employment) is crucial for understanding differences in gender wage gaps and motherhood wage penalties – yet too rarely is fully considered.

The next set of columns display the probability of being working full-time, given employment. Here we observe dramatic differences between childless women and mothers. Here, in West Germany, the UK, Ireland, and Australia, countries where mothers' overall employment participation falls far behind that of childless women's, we also find large gaps in the probabilities of full-time employment. Thus, here, not only are mothers absent in the labor market, even when they participate, they are less likely to work full-time. Mothers are also much less likely than childless women to work full-time in the Netherlands and Austria. In contrast, in the US, Russia, and Poland, countries with high maternal employment rates, we also see fairly similar probabilities of full-time employment between childless women and mothers. Mothers are equally likely as childless women to work full-time in Finland and the Eastern European countries. We argue that,

16

conversely, where mothers have high levels of full-time employment, we will observe smaller

motherhood penalties, even when part-time hours are controlled.

The Motherhood Penalty

Table 3 presents preliminary results from two models: 1) using OLS to estimate the gross

effect of motherhood (not controlling for other factors) on annual earnings and 2) using

Heckman two-stage selection models to first re-estimate the gross model and then to estimating a

net model, controlling for all individual-level measures (married/cohabiting, age, high

educational attainment, and full-time hours). The table includes columns indicating how much of

the motherhood penalty can be explained by factors introduced in the subsequent models. The

final column reports what proportion of the original motherhood wage penalty cannot be

explained by individual selectivity or characteristics.

[Table 3 about here]

Model One demonstrates, across these twenty-two countries, remarkable variation the

presence and size of the motherhood penalty. We find unadjusted motherhood wage penalties in

twenty countries. The OLS coefficients reveal the full wage differences between mothers and

childless women, and ranging from zero (Israel and Hungary) to over a 70 percent $(100*(e^b-1))$

wage penalty in West Germany, Luxembourg, and the UK. While we will show that differences

among women are linked to their decisions to mother, to be employed, and to their earnings,

these initial figures demonstrate the full degree of earnings inequality between women with and

without children across countries.

Model Two re-estimates the gross model, but this time using Heckman selection criteria.

A sizeable portion of the unmeasured differences between women that influence their selection

in the labor market and are linked to wages and mothering are eliminated in the Heckman selection. Differential selection of mothers and childless women into the labor market completely accounts for the wage penalties found in East Germany, Spain, France, Belgium, Sweden, and Finland. But (reduced) motherhood penalties persist in fourteen countries, suggesting that mothers are penalized in diverse settings. Penalties are highest in Luxembourg, the Netherlands, Germany, and Austria, although they are also quite high in the United Kingdom. These are also all countries with relatively high levels of part-time employment among mothers (see Table 2).

In Model Three, controls for individual level factors, entirely explain the motherhood wage penalties in a number of countries, including Australia, Ireland, Italy, and the Slovak Republic.[22] In other words, in these nations, employed mothers do not appear to earn lower wages than other employed women, controlling for individual-level characteristics (and selection into our models). In addition, individual-level controls also explain a portion of the motherhood penalty in West Germany, Austria, Luxembourg, the Netherlands, and the United Kingdom. Surprisingly, adding individual level controls to the model makes penalties emerge or increase in size in Finland, Poland, and East Germany. This indicates that employed mothers have greater amounts of human capital or more positive characteristics than childless women in these countries, and these characteristics protect mothers from lost earnings. However, accounting for these greater endowments reveals the extent of the motherhood penalty in these three countries. In the remaining countries, individual-level controls explain a small amount of the wage penalty experienced by mothers. Table Three's final column reveals that standard controls for selectivity, human capital, and other individual characteristics explain less than one-half of the initial motherhood wage penalty in East Germany, Luxembourg, Austria, the United States, Russia, and Finland.

While we explain motherhood wage penalties in eight of twenty-two countries with

Heckman selection models and individual control variables, this finding of no net motherhood

penalties does not indicate mothers are doing as well as non-mothers in those countries. The

absence or presence of particular family and work policies may penalize mothers by preventing

their employment, or by influencing their human capital accumulation in light of perceived labor

market opportunities. To make clear the connection between the presence of mothers in the labor

market and the size of the wage penalties they incur, in Figures One and Two we map the

unexplained motherhood penalty against, first, mothers' probabilities of employment and second,

mother's probabilities of full-time work, if employed, from Table One.

[Figures One and Two About Here]

Figure One shows a strong relationship between the overall participation of mothers in the labor

market and the size of the wage penalty. Countries with relatively very low maternal employment

(Spain and Italy, but also Israel, Ireland, and Australia) show no motherhood penalty. This could

be a "creaming effect": only highly committed and ambitious mothers persist in the labor market in

these low maternal employment conditions, and these mothers are less likely to receive a wage

penalty. Thus, women most likely to incur large motherhood penalties are simply absent from the

labor market (incurring, in a sense, the "worst" wage penalty of all). Conversely, countries with

broader participation of mothers in the workforce evidence larger wage penalties: Russia, Austria,

East Germany, the Netherlands, and Luxembourg. But the relationship is imperfect and there are

notable outliers. Sweden also has very high maternal labor force participation but no wage penalty

to mothers, as do Belgium, the Czech Republic, and the Slovak Republic. The cause of the large

penalties in many higher maternal employment countries may be linked to mothers' incorporation

19

as part-time workers, in addition to less positive selection, compared to low maternal employment countries.

Figure Two shows the association between mothers' probabilities of full-time employment and the motherhood wage penalty. Here we see a positive relationship: in countries where mothers are more likely to be full-time workers, the motherhood penalty tends to be lower, such as in the Eastern European countries and Finland. Conversely, countries with high levels of part-time employment among mothers show larger wage penalties (West Germany, the United Kingdom, and Austria). We view the different directions of the relationship between maternal employment probabilities and wage penalties in Figures One and Two as telling two parts of the same story. In Figure One, we learn that in countries where few women persist in employment, wage gaps are smaller; in Figure Two, we learn that in countries where most women work full-time, wage gaps are larger. Again, we argue this is due to the "creaming effect" in low-employment countries, where smaller numbers of women in the labor force are more positively selected on measures not included in our model, and this lowers earnings inequality between mothers and childless women.

Turning back to Table Three, despite the inclusion of individual-level controls, many mothers (in twelve of the twenty countries with initial motherhood penalties) incur significant wage penalties. These wage penalties range from 3 percent in the Czech Republic to more than 59 percent in Luxembourg. Penalties are smaller in Sweden and Eastern European nations, with the exception of Russia. Non-European countries show relatively moderate wage penalties of 14 percent in the United Kingdom and Canada and almost 20 percent in the United States. Our net motherhood penalty findings are not entirely surprising. The Scandinavian countries, Israel, and Eastern European countries have made efforts to stimulate women's labor market participation, and have a longer history of work-family policies than many of the other countries. Australia, also

20

has lower levels of wage inequality than other non-European countries, which may benefit mothers vis-à-vis other women. France and Belgium have consistently operated somewhat differently from their continental European peers, providing more support for working mothers (Esping-Andersen 1999; Gornick and Meyers 2003; Author 2007a). At the same time, wage penalties to mothers are relatively strong in Canada, the US, and the UK and even stronger in Austria, Germany, the Netherlands, and Luxembourg.

These findings emphasize that wage penalties to motherhood are not simply a given. In some contexts, mothers are no more likely to earn lower wages than women without children. However, we are most interested in the country-level effects. How do policies and cultural norms shape the motherhood wage penalty? We next examine the associations between policy measures from our newly collected database, cultural attitudes from the ISSP, and the unexplained motherhood wage penalty in these nations, controlling for the factors mentioned above. In Figures Three through Eight, we present associations between the motherhood penalties (controlling for individual-level factors) and our policy measures and the cultural indicators.

Contextual Analysis: Linking Penalties to Policies and Culture

Contrary to our hypotheses, we found few associations with maternity leave length or maternity wage replacement rates. This is primarily due to the absence of variation in these measures across countries – most other countries have paid maternity leave for 12-16 weeks, although the United States is the exception. We turn then, to parental leave length and its association with the unexplained motherhood wage penalty of Table Three. Figure Three presents a scatterplot of these two variables, with countries marked in the data field. Here, we italicize the countries with relatively low probabilities of mothers' employment, so it is clear that their wage

penalties reflect a "creaming" effect. We also present a solid line showing the correlation between all countries' penalties with the policy measure, plus a dashed line showing the correlation between the policy measure and motherhood penalties in countries with moderate to high maternal employment (thus dropping the low maternal employment countries). We hypothesized that parental leave (in weeks) would have curvilinear relationship with the wage penalty: moderate parental leaves would decrease the motherhood penalty, by allowing women to maintain employment after giving birth, very no and very long parental leaves would increase wage penalties to mothers, as they might actually reduce mothers' labor force attachment.[23]

[Figure Three About Here]

Figure Three shows a mildly curvilinear relationship between leave length and the motherhood penalty. No or very short leaves (less than 6 months) are associated with larger motherhood penalties, but as leave lengths increase, the penalties decline, up until about 100 weeks. After this point, motherhood penalties begin increasing somewhat with longer leaves. However, the wide variety in weeks of parental leave among countries without wage penalties to motherhood make it clear that parental leave is only one of a variety of policies that may be shaping outcomes for mothers. Moderately long parental leaves may be associated with countries without a wage penalty (Sweden) or with a large one (Austria). Therefore, without controlling for other policy effects, we can only make limited arguments about the association of maternity leaves and parental leaves with motherhood wage penalties.

We hypothesized that state-provided childcare availability might impact mothers' earnings. Programs for children under three were explicitly designed to help families balancing care and employment, while programs for children three to six are seen as educational programming in addition to supporting working parents (Gornick and Meyers 2003; Kamerman and Kahn 1991).

We expected that state-provided or -subsidized childcare would decrease the wage penalty by allowing women the opportunity to engage in paid employment (McDonald 2000). We use separate measures for policies that apply to infants (aged 0 to 2) and those that apply to preschoolers (aged 3 to 6), and examine these trends in Figures Four and Five. Again, we italicize the countries with relatively low probabilities of mothers' employment, and present a separate dashed line summarizing the correlation motherhood penalties and childcare availability for high maternal employment countries.

Figure Four shows the clearest association between policies and motherhood penalties. Indeed, almost all of the countries without motherhood penalties provide public childcare to a sizable portion of children under three, specifically Sweden, Belgium France, and Israel. A few countries, notably Australia, Ireland, Poland, Spain, and Czech Republic, do not provide high levels of childcare for infants and toddlers, and do not show wage penalties to motherhood. Yet, these are exceptions, and Australia, Ireland, and Spain all have relatively low probabilities of mothers' employment. When we exclude these countries and redraw the line best fitting this association, the relationship is dramatically steeper: countries that lack publicly funded childcare evidence larger motherhood penalties. Figure Five replicates the strong positive correlation between publicly funded childcare and the motherhood penalty, and again, excluding low maternal employment countries amplifies the relationship. The importance of publicly funded childcare being linked with smaller motherhood penalties is not limited to infant care; the correlation is even stronger when older children receive care, despite the generally higher levels of provision of this kind of care across countries analyzed.[24]

[Figures Four and Five About Here]

We next consider whether cultural preferences for women in combining motherhood and employment are linked to the motherhood penalties we observe. Given our strong findings for childcare, we examined cultural preferences for maternal employment when children are preschoolers (Figure Six) and school aged (Figure Seven). Again, we italicize the countries with relatively low probabilities of mothers' employment and present a dashed line illustrating the correlation when these countries are excluded. In both figures we see a strong correlation between motherhood penalties and cultural support for maternal employment. While there are countries with zero wage penalties crossing the spectrum of favoring maternal employment during preschool years, the largest wage penalties are associated with the least support, and the smallest penalties with the greatest support, for maternal employment. The correlation is even stronger when the question focuses on school age children. Interestingly, many of the countries with low levels of women's employment also have less cultural support for mothers' employment when children are young. Yet the correlations are stronger when these low maternal employment countries are excluded. While it is not possible to identify "which came first," it would seem that policies and culture reinforce one another, as does mothers' employment probabilities.

Finally, in Figure 8 we consider the relationship between the strength of agreement or strong agreement with the statement "A pre-school child is likely to suffer if his or her mother works" and motherhood penalties. Again, we italicize the countries with relatively low probabilities of mothers' employment and include a dashed line summarizing the association with these countries excluded. Not surprisingly, motherhood penalties tend to be larger in countries where maternal employment is viewed as detrimental for children and smaller in countries where maternal employment is not seen as harmful to children. Again, the association is stronger when low maternal employment countries are excluded. West Germany, Austria, and Russia, in

24

particular, evidence some of the highest values on both measures. Italy also scores high in its disapproval of maternal employment, yet shows no motherhood wage penalty. Yet, this may be linked to the marked absence of Italian mothers in the labor market.

In addition to the analyses we present, a wide range of other factors that vary cross-nationally may shape the motherhood wage penalty. Many of these factors, that are relevant for explaining other types of earnings gaps (for example, the gender gap), may be less relevant for a study in which we are focusing on the comparison between different groups of women, i.e. comparing mothers' to non-mothers' earnings. For example, the gender gap in earnings cross-nationally is significantly affected by wage distributions (Blau and Kahn 1992, 1996, 2003; Mandel and Semyonov 2005). In analyses not shown, we examined the correlation between the Gini coefficient (measuring the dispersion of household income in society) and the size of the motherhood penalties, and found no relationship between overall income inequality and motherhood earnings penalties.[25] This is notable, given the important impact of income inequality on gender gaps in pay (Blau and Kahn 1992, 1996, 2003; Mandel and Semyonov 2005), and suggests that motherhood penalties – earnings gaps between mothers and childless women – cannot be explained or easily attributed to larger economic pressures leading to pay inequalities.

Discussion and Conclusions

Our findings show significant motherhood penalties in many, but not all countries. Differential selection into the labor market and motherhood partially accounts for these penalties, as do human capital and other differences between mothers and childless women. Yet clearly social policies and cultural support for combining work and motherhood matter. Of all of the

policies we examine, public care for infants and toddlers appears to have the clearest positive associations with the motherhood earnings gap; attempts to strengthen these programs may help lessen the impact of motherhood on women's economic outcomes. While state provision of childcare for the young should, logically, impact employment rates (Hook and Pettit 2005), and has been shown to affect poverty rates (Author 2007b), we offer an important step in identifying its effect on mothers' wages. On the other hand, the weaker correlation between motherhood penalties and parental leave appears to be mildly curvilinear, with larger penalties associated with very short and very long leaves. Finally, we demonstrate the importance of greater cultural support for maternal employment in relation to smaller motherhood penalties.

Cultural support for maternal employment, and sentiment that maternal employment is not detrimental to child well-being, are strongly associated with smaller motherhood penalties. While culture may influence the kinds of policies that are enacted, work-family policies, in addition to directly impacting the motherhood penalty, may also alter the cultural norms regarding employment among mothers, which, in turn, may change women's own preferences and thereby affect the motherhood penalty. Hook (2006) makes a similar argument about the impact of social policies influencing normative gendered behaviors. Similarly, policy contexts may impact employers' preferences for hiring and evaluating the work performance of mothers. In our future work, we see the need to simultaneously combine cultural measures with policy measures to estimate their joint impact on the motherhood penalty.

In the current analyses, we show the associations between policies, cultural norms, and motherhood earnings penalties in twenty-two countries. In addition potential statistical dependence between culture measures and work-family policies, it is also possible that policies may combine to produce differential effects. Previous research (Author 2007b) suggests that, for

example, when we control for the effects of one policy, we may find stronger (or weaker) effects of another policy. In later analyses, we plan to examine how, for example, length of parental leave operates on wage penalties, controlling for availability of public childcare for children under three. Such an approach may provide clearer answers about the associations between particular policies and motherhood penalties. It also requires a different modeling structure: hierarchical, or multi-level, models. Multilevel random-effects models represent our future direction, one that may allow us to estimate country-level effects (i.e., social policies) while simultaneously controlling individual-level factors (Bryk and Raudenbush 2002; DiPrete and Forristal 1994). The drawback of this approach is that it does not elaborate the wide variation in motherhood penalties across countries, as our current analysis does.

Despite these limitations, this study advances the state of knowledge of work-family policy effects on women's economic outcomes. Our cross-national focus enabled us to identify a number of contexts (primarily Scandinavian and Eastern European) where there is no motherhood penalty in earnings, once differential selection into motherhood and the labor force is controlled. Since much of the gender wage gap is likely driven by differences between parents (as evidenced by converging wages between childless men and women), this is an important finding. Similarly, in we find lower full-time employment gaps between mothers and childless women in much of Eastern European and Scandinavian countries. But our analyses demonstrate that employment levels (full and part-time combined) are not perfectly correlated with motherhood penalties: large penalties are found in high maternal employment countries, primarily non-European countries, and small penalties are found in low maternal employment countries, such as Italy and Spain. We argue that finding of no motherhood penalty in low maternal employment countries does not mean mothers do as well as childless women in those

countries. To the degree their employment opportunities are constrained or blocked, they may suffer a very substantive motherhood penalty (no wages at all). All of this points to the importance of considering the role of women's, particularly mothers', representation in paid work in fully understanding the processes the produce cross-national variation in the motherhood penalty. When mothers are excluded from paid work, or largely found in part-time employment, family leave and child care policies may be less helpful in mitigating earnings inequalities by parental status. Indeed, our policy and cultural analyses demonstrated that these work-family policies and cultural supports matter more for reducing earnings inequality when mothers have greater representation in the labor force. While incorporating mothers more fully into paid work may not be a universal policy goal, our analysis highlights the diminished effect of work-family reconciliation policies to mitigate earnings inequalities where mothers are less likely to be employed. Yet, these policies, particularly childcare for very young children, and cultural supports for maternal employment, appear strongly linked to lower inequality between mothers and childless women where mothers have greater access to paid employment.

ENDNOTES

[1] We gratefully acknowledge support from the National Science Foundation for the collection of these data.

[2] Yet Gangl and Ziefle (2009) lack establishment-level measures of family friendly workplaces or policies. Instead they use part-time status, occupational prestige, gender segregation, public sector status, and self-employment, suggesting that part-time, low-prestige, feminized public sector jobs, or business ownership are all more conducive to balancing work and family. Yet workers with lower wages and occupational status are *less likely* to have access to family-friendly benefits (Shore 1998). In addition, women in nonprofessional jobs are less likely to have control over the pace and timing of their work which is positively associated with reduced work and family conflict (Thomas and Ganster 1995). Finally, the literature on self-employment indicates this is often an option of last resort for balancing work and family responsibilities, particularly given its low pay (Budig 2006).

[3] In many countries, cohabitation is akin to marriage, thus we treat cohabitors as married couples.

[4] For example, while labor supply is measured as an individual factor, country-level policies surrounding working-time regulations or parental care leaves may constrain an individual's decision about how many hours to work.

[5] Waldfogel (1998b) found women covered by and using maternity leave in Britain and the U.S. received a wage bonus.

[6] To capture differential selection into national labor forces based on motherhood status, we use Heckman selection models in estimating the wage penalty. We also examine how wage penalties may be linked to varying levels of labor force participation by mothers across different country and policy contexts.

[7] For evidence of this, see Author (2009).

[8] We cannot measure productivity, but it is unlikely that motherhood's effects on productivity vary cross-nationally. We cannot measure employer discrimination, but country-level variation in discrimination may be affected by family policies.

[9] This age restriction excludes those engaged in post-secondary schooling and mothers whose children may be adults who no longer living in the family home. Due to data limitations, only mothers with children living in their household can be identified. This likely leads to underestimation of the penalty because mothers whose children have left the home could still suffer from reduced earnings, but would be coded as childless women in our sample.

[10] For details, please see Author (2009).

[11] To ensure the robustness of findings, we estimated models using different transformations of the dependent variable. These transformations included a) the natural log of national currencies and b) (following Mandel and Semyonov 2005) the ranking score of individuals wages in their country's (percentile) earnings distribution. Findings were robust across these transformations of the dependent variable.

[12] While not an ideal measure of experience, this is commonly used when actual work experience is lacking (see Filer 1993; Stewart 2000).

[13] For countries where more detailed labor supply measures are available, we re-estimated the models using weekly hours and annual weeks worked. The motherhood penalty estimates tend to be slightly more conservative using the more detailed labor supply measure.

[14] We ran models with married, and with married and cohabiting grouped together; there are no notable differences, so we include the cohabitors in these analyses.

[15] We examine former East and West Germany separately, due to the persistent differences in employment patterns and different policy legacies (Rosenfeld, Trappe, and Gornick 2004).

[16] For the Slovak Republic we use data from 1992, for the Czech Republic from 1996 and for Poland from 2004.

[17] Of course, it is likely that the lagged effect is longer, especially given our measurement of motherhood. Without longitudinal individual-level data, however, we believe that this is the best approach to take.

[18] For example, we include the percentage of children in publicly funded care, which taps the availability of government-sponsored childcare slots (for example, though subsidized childcare exists in the United States, it can be difficult to access).

[19] These data are available through the Leibniz Institute for the Social Sciences: http://www.gesis.org/en/services/data/survey-data/issp/modules-study-overview/family-changing-gender-roles/2002/.

[20] For Italy and Canada, only 1994 ISSP data was available.

[21] The wordings of the items used are: a) "A pre-school child is likely to suffer if his or her mother works." (respondents were asked to answer using a 5-point likert scale, including "strongly disagree, disagree, neither disagree nor agree, agree, and strongly disagree."); b) Do you think that women should work outside the home full-time, part-time or not at all under these circumstances: When there is a child under school age; c) After the youngest child starts school.

[22] In all of these analyses, the controls act as expected (education, weeks worked, and age are positively associated with wages, while part-time employment is negatively associated with wages. Interestingly, partnership status (married or cohabiting) has a negative effect in Canada, Czech Republic, Finland, France, Poland, an insignificant effect in Australia, Austria, Belgium, Germany,

Hungary, Luxembourg, the Netherlands, Russia, Slovak Republic, Sweden, UK, and US, and a positive effect in Israel.

[23] We also calculated the same figure with weeks of paid parental leave; results did not diverge greatly from Figure Three, so we present only Figure Three for simplicity.

[24] One criticism of our analysis could be that focusing on publicly-supported childcare underestimates the provision of childcare in countries, such as the U.S., that rely on market-based solutions. A separate criticism could be that our measures fail to capture variation across countries in the intensity, or number of hours, of childcare used. In results not shown, we used data from Lewis (2009) available on a subset of our countries to examine correlations between percentage of children in any childcare (public and private) with the motherhood penalty and found our results were robust. We also examined the proportion of children in full-time (30+ hours) of care versus part-time care, and found much stronger correlations between motherhood penalties and full-time care usage. This is consistent with our argument that greater availability of childcare (including intensity) is correlated with smaller motherhood penalties.

[25] A society in which every household earned the same amount would score "0"; a society in which one household earned all of the income, and everyone else earned nothing would score "1." Therefore, lower scores indicate lower levels of income inequality.

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Table 1. Data Sources and Sample Sizes for All Countries in Analyses

Country	Original Data Source	Survey Year	Full LIS Samples	Restricted sample: 25-45 year old women	% mothers
Australia	Survey of Income and Housing Costs	2001	13,183	2,267	72.8
Austria	European Community Household Panel	2000	6,845	728	80.2
Belgium	Panel Study of Belgian Households	2000	6,935	918	79.2
Canada	Survey of Labour and Income Dynamics	2000	72,850	9,435	72.7
Czech Republic	Czech Microcensus	1996	71,836	8,832	89.1
Finland	Income Distribution Survey	2000	27,841	2,935	75.7
France	Household Budget Survey	2000	25,803	3,462	79.0
Germany East	German Social Economic Panel Study	2000	6,776	864	82.2
Germany West	German Social Economic Panel Study	2000	22,075	2,959	72.8
Hungary	Household Monitor Survey	1999	5,517	505	87.7
Ireland	Living in Ireland Survey / European Community Household Panel	2000	9,131	794	84.8
Israel	Household Expenditure Survey	2001	19,555	2,299	88.4
Italy	Survey on Household Income and Wealth	2000	22,268	2,270	82.6
Luxembourg	Socio Economic Panel	2000	6,240	947	70.3
Netherlands	Socio-Economic Panel	1999	12,445	1,897	68.7
Poland	Household Budget Survey	2004	99,038	10,932	87.5
Russia	Russia Longitudinal Monitoring Survey	2000	9,248	1,050	87.8
Slovak Republic	Slovak Microcensus	1992	47,715	6,638	91.4
Spain	European Community Household Panel	2000	14,320	1,461	72.1
Sweden	Income Distribution Survey	2000	33,139	3,910	76.4
United Kingdom	Family Resources Survey	1999	59,010	8,144	73.2
United States	Current Population Survey	2000	128,821	15,826	72.7

Table 2. Women's Employment and Full-time Employment Probabilities (controlling for age, educational attainment, other household income and other household income squared)

	Employment Probabilities		*Gap*	Full-time Emp. Probabilities		*Gap*
	childless women	mothers		childless women	mothers	
Continental Europe						
Austria	0.904	**0.766**	*0.138*	0.903	**0.546**	*0.357*
Belgium	**0.858**	0.762	*0.096*	**0.802**	0.685	*0.117*
France	**0.849**	0.690	*0.159*	**0.856**	0.751	*0.105*
Germany West	0.939	**0.652**	*0.287*	0.892	**0.400**	*0.492*
Luxembourg	**0.928**	0.729	*0.199*	**0.924**	0.676	*0.248*
Netherlands	**0.936**	0.762	*0.174*	**0.853**	0.279	*0.574*
Mediterranean						
Italy	**0.747**	0.514	*0.233*	**0.860**	0.705	*0.155*
Spain	**0.703**	0.497	*0.206*	**0.857**	0.763	*0.094*
Eastern European						
Czech R.	0.928	**0.752**	*0.176*	**0.967**	**0.957**	*0.010*
Germany East	0.900	**0.775**	*0.125*	**0.842**	0.811	*0.031*
Hungary	0.793	**0.630**	*0.163*	0.929	**0.877**	*0.052*
Poland	**0.783**	0.699	*0.084*	**0.904**	0.878	*0.026*
Russia	0.794	**0.829**	*-0.035*	0.866	**0.860**	*0.006*
Slovak R.	0.863	**0.746**	*0.117*	0.991	**0.963**	*0.028*
Scandinavian						
Finland	**0.801**	0.626	*0.175*	**0.951**	0.915	*0.036*
Sweden	**0.872**	0.847	*0.025*	**0.802**	0.657	*0.145*
Non-European						
Australia	0.879	**0.610**	*0.269*	**0.875**	0.514	*0.361*
Canada	**0.826**	0.727	*0.099*	**0.896**	0.759	*0.137*
Ireland	0.902	**0.611**	*0.291*	**0.814**	0.513	*0.301*
Israel	**0.738**	0.593	*0.145*	**0.865**	0.740	*0.125*
UK	**0.877**	0.670	*0.207*	**0.919**	0.495	*0.424*
US	**0.822**	0.734	*0.088*	**0.894**	0.810	*0.084*

Table 3. Effect of Motherhood on the Natural Log of Annual Wages

	gross motherhood penalty (OLS)		gross motherhood penalty (Heckman)		*% of Penalty Explained: Selectivity*	net motherhood penalty (Heckman)		*% of Penalty Explained: Selectivity & Indiv. Char.*	*% of Penalty Unexplained: by Selectivity or Controls*
Continental European									
Austria	-.565	***	-.407	***	*28%*	-.312	***	*45%*	*55%*
Belgium	-.162	*	n.s.		*100%*	n.s.		*100%*	*0%*
France	-.193	***	n.s.		*100%*	n.s.		*100%*	*0%*
W Germany	-.812	***	-.605	***	*25%*	-.286	***	*65%*	*35%*
Luxembourg	-.742	***	-.668	***	*10%*	-.476	***	*36%*	*64%*
Netherlands	-.670	***	-.499	***	*26%*	-.174	***	*74%*	*26%*
Mediterranean									
Italy	-.139	***	-.109	**	*22%*	n.s.		*100%*	*0%*
Spain	-.113	+	n.s.		*100%*	n.s.		*100%*	*0%*
Eastern European									
Czech R.	-.145	***	-.060	**	*59%*	-.031	+	*79%*	*21%*
E Germany	-.168	*	n.s.		*100%*	-.182	*	*-8%*	*108%*
Hungary	n.s.		n.s.		*NA*	n.s.		*NA*	*NA*
Poland	-.189	***	-.037	+	*80%*	-.055	**	*71%*	*29%*
Russia	-.328	**	-.268	*	*18%*	-.219	*	*33%*	*67%*
Slovak R.	-.171	***	-.088	***	*49%*	n.s.		*100%*	*0%*
Scandinavian									
Finland	-.111	**	n.s.		*100%*	-.071	+	*36%*	*64%*
Sweden	-.273	***	n.s.		*100%*	n.s.		*100%*	*0%*
Non-European									
Canada	-.306	***	-.194	***	*37%*	-.134	***	*56%*	*44%*
Australia	-.417	***	-.219	***	*47%*	n.s.		*100%*	*0%*
Ireland	-.482	***	-.195	+	*60%*	n.s.		*100%*	*0%*
Israel	n.s.		n.s.		*NA*	n.s.		*NA*	*NA*
UK	-.717	***	-.568	***	*21%*	-.135	***	*81%*	*19%*
US	-.339	***	-.241	***	*29%*	-.183	***	*46%*	*54%*

Note: *** p>.001, ** p>.01, * p>.05, + p>.10; two-sided test

Figure One: Association between Cross-National Motherhood Penalty and Mothers' Employment Probabilities (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)
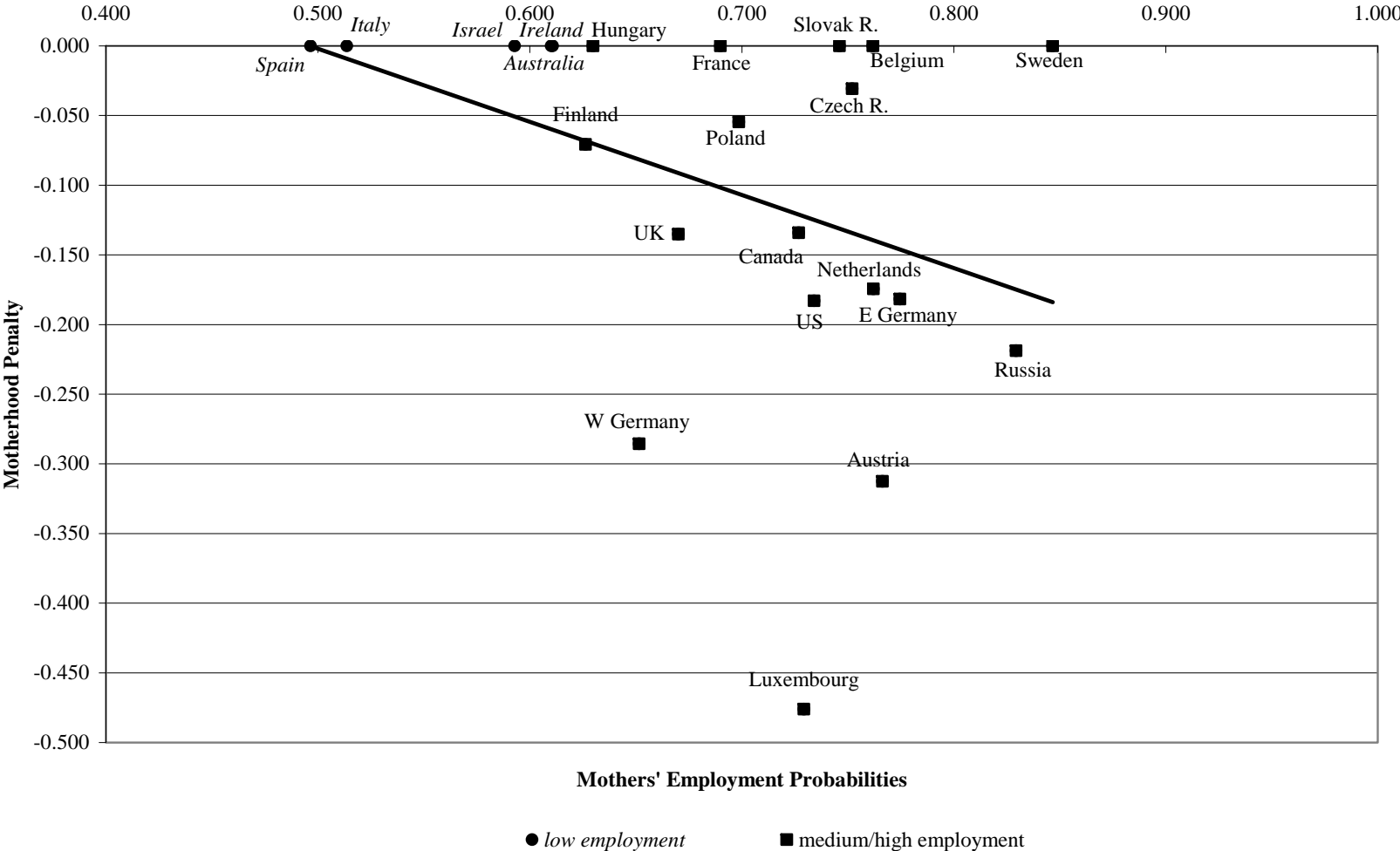

Mothers' Employment Probabilities

● *low employment*   ■ medium/high employment

Figure Two: Association between Cross-National Motherhood Penalty and Mothers' Full-time Employment Probabilities (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)
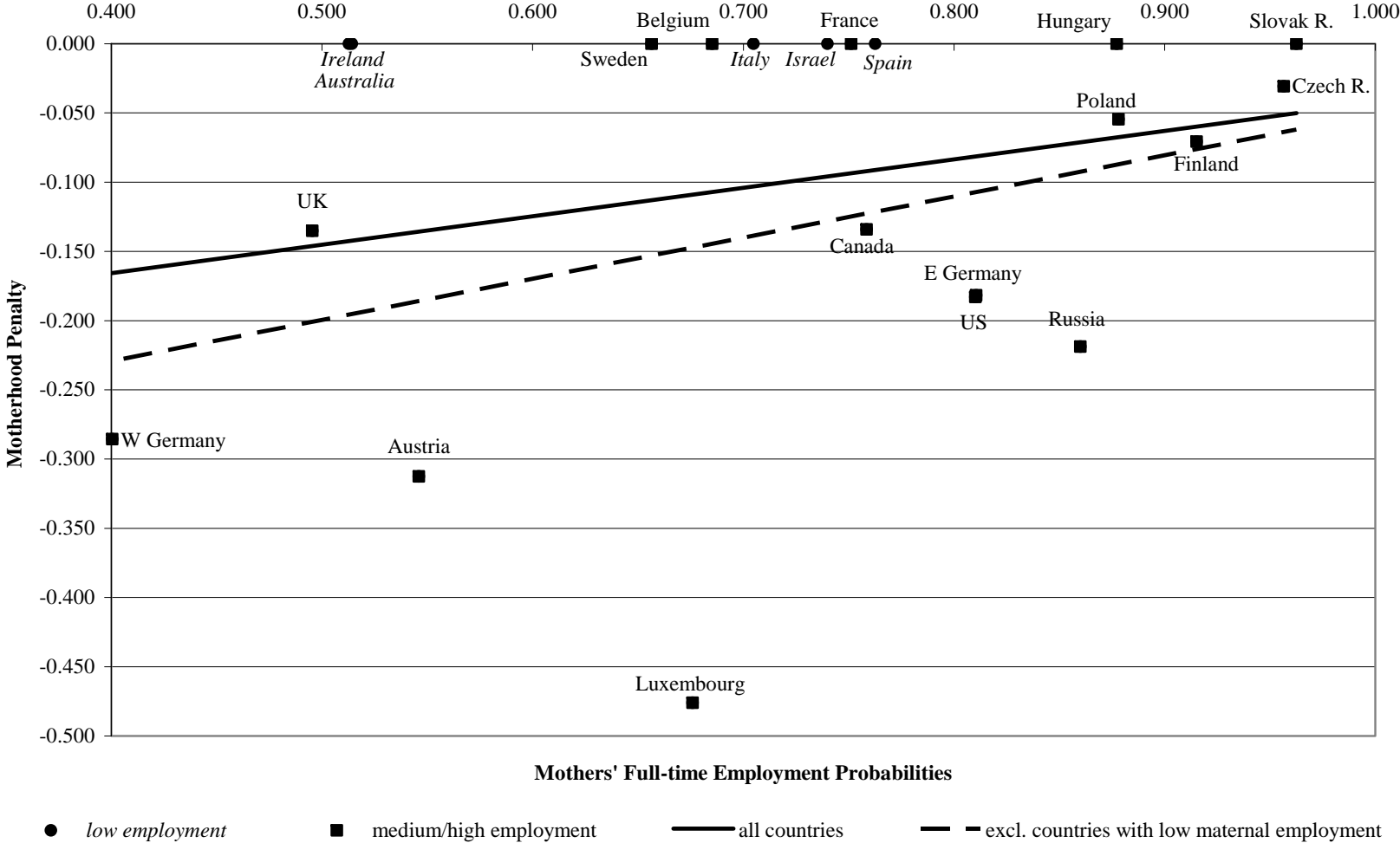
Figure Three: Association between the Maximum Weeks of Parental Leave Available to Women and Motherhood Penalties (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)
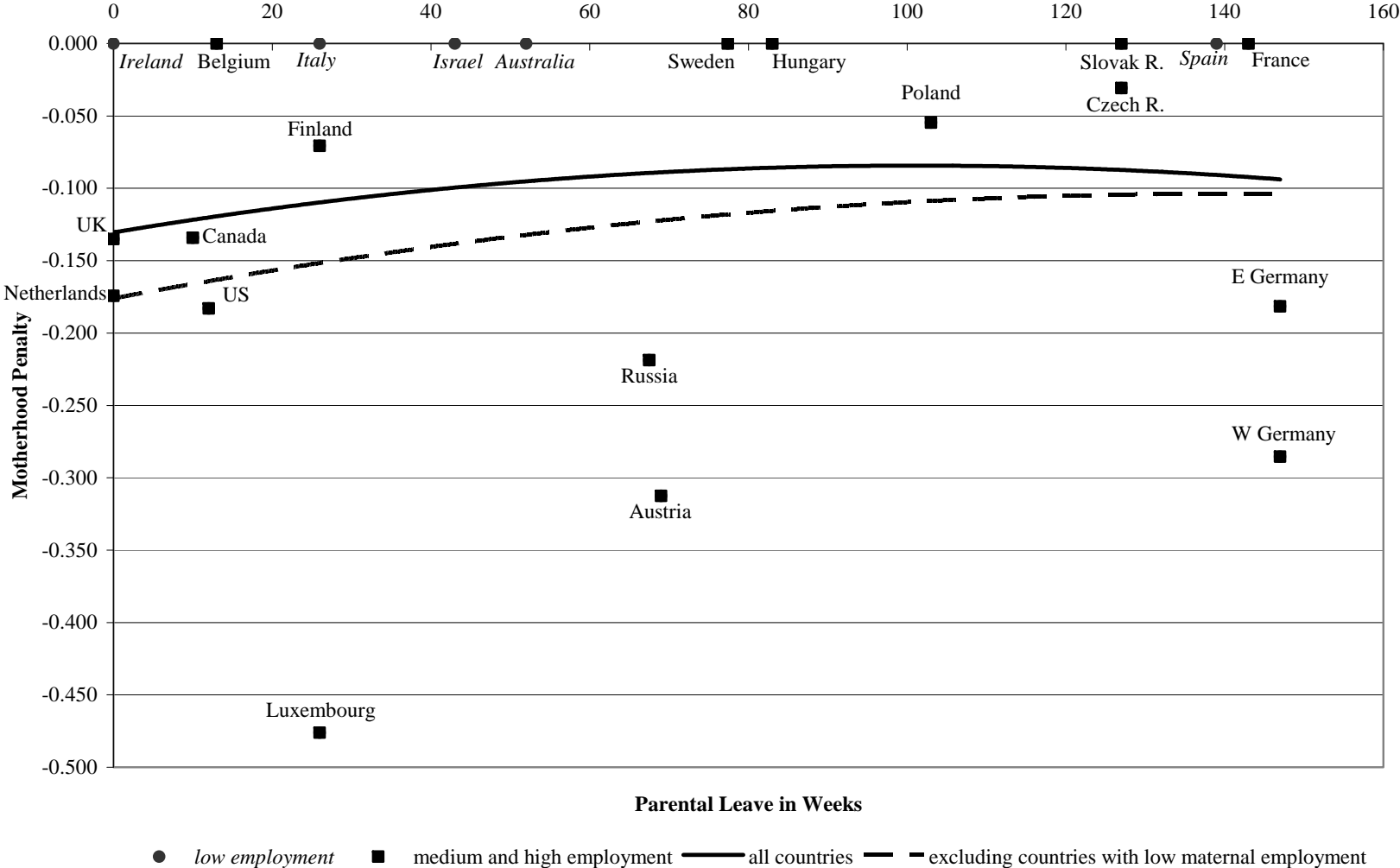
Figure Four: Association between Cross-National Motherhood Penalties and Childcare for Children Under Three (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)

% of 0-2 Year Olds in Public Childcare

- ● *low employment* ■ medium/high employment ―― Linear (low employment) – – excl. countries with low maternal employment
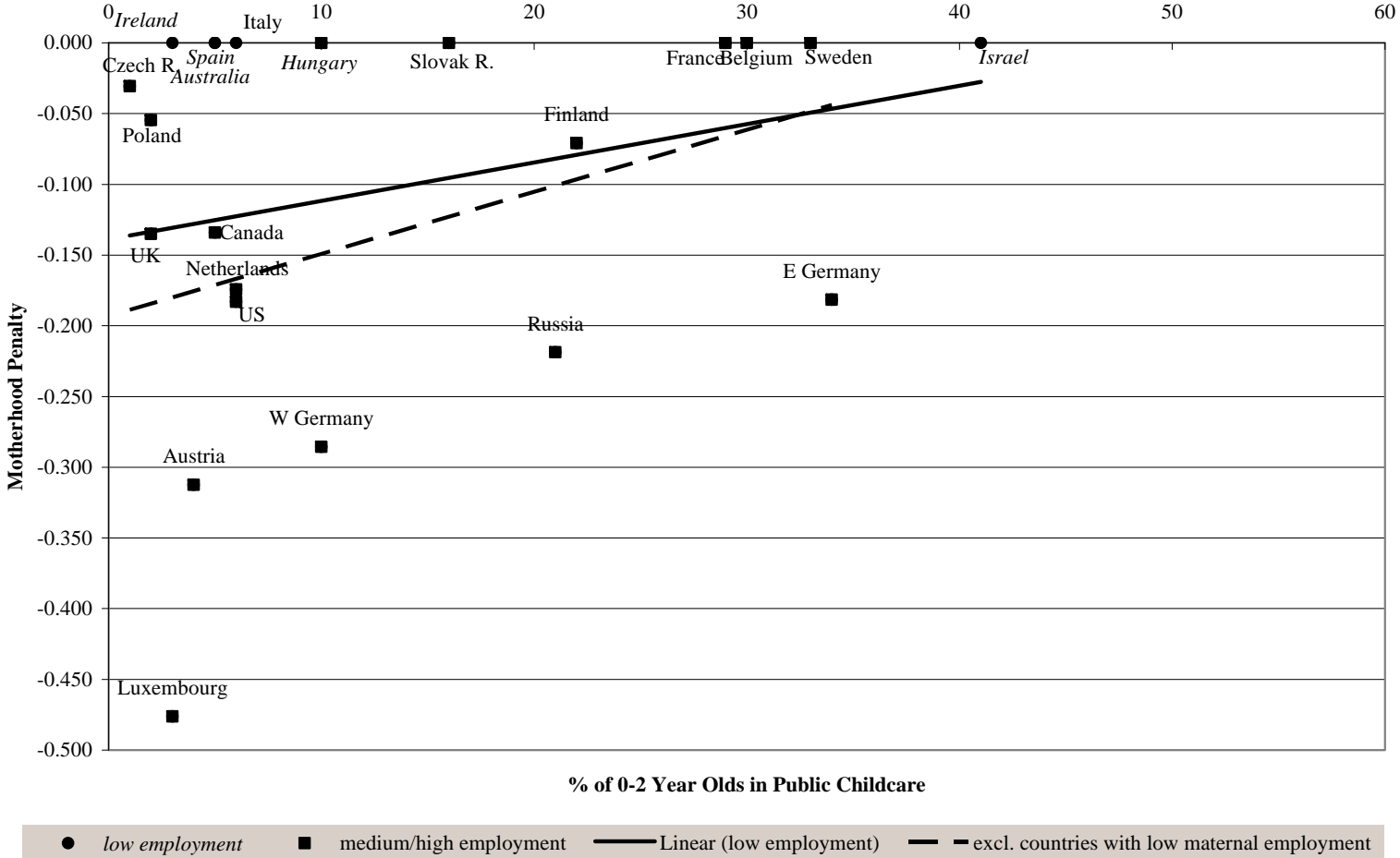
Figure Five: Association between Cross-National Motherhood Penalties and Childcare for Children Aged Three to Six (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)

% of 3-6 Year Olds in Public Childcare

- ● *low employment* ■ medium/high employment ——— all countries – – – excl. countries with low maternal employment
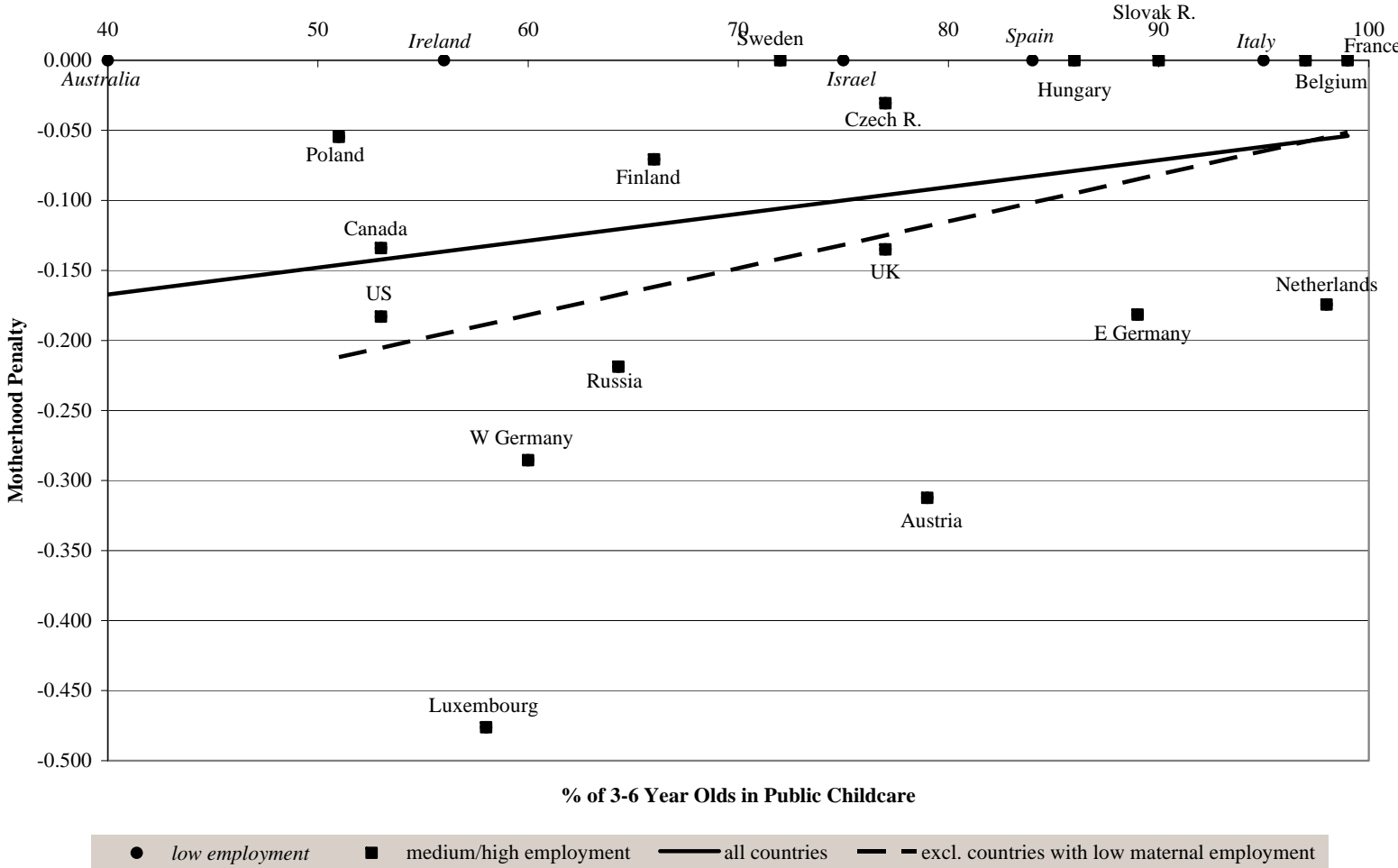
Figure Six: Association between Cross-National Motherhood Penalties and % of Respondents Preferring Mother's Full-time Employment when Children Preschool Aged (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)

% Respondents Preferring Mothers' Full-time Employment when Child Preschool-Aged

● *low employment*　　■ medium/high employment　　——all countries　　– – excl. countries with low maternal employment
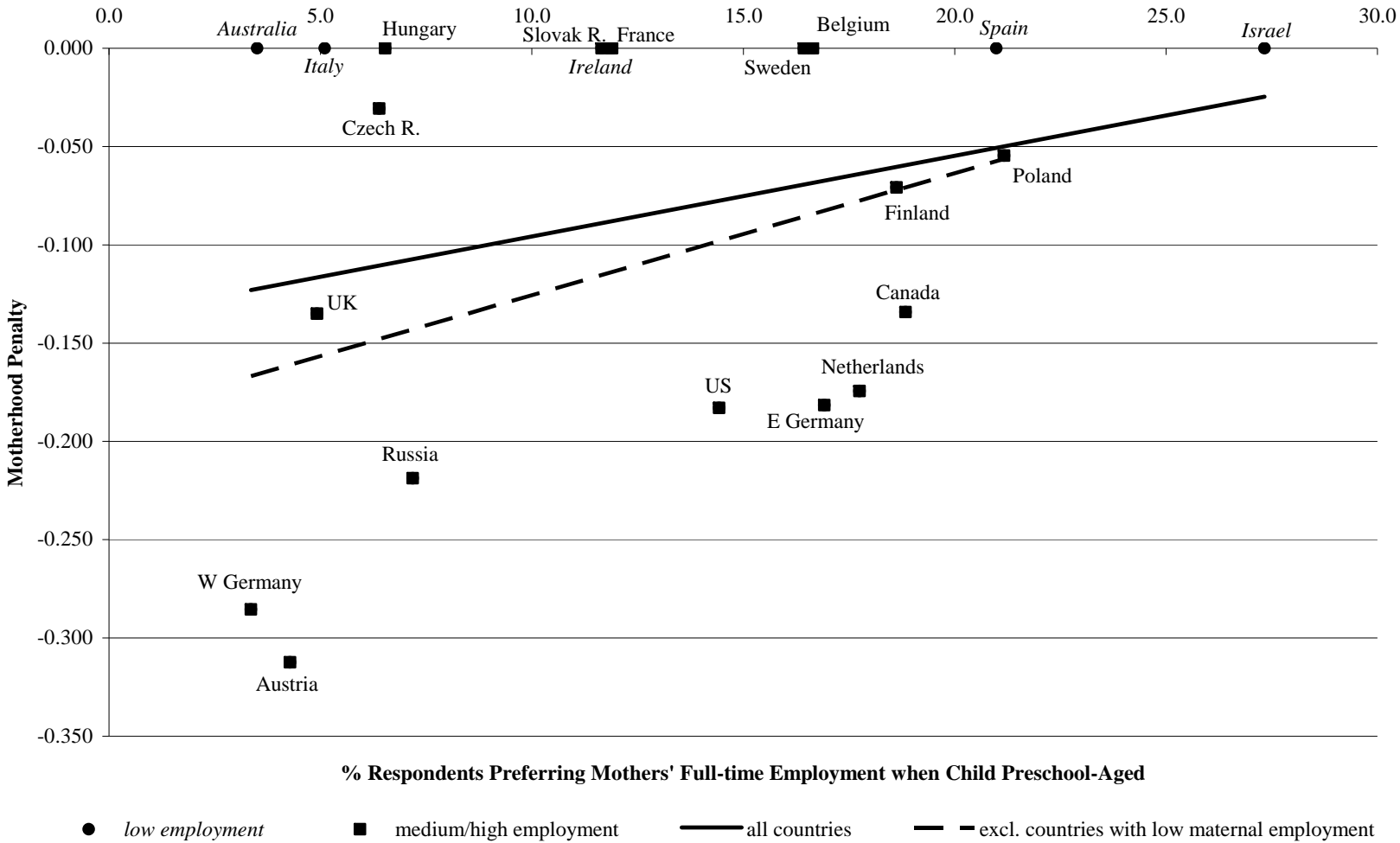
Figure Seven: Association between Cross-National Motherhood Penalties and % of Respondents Preferring Mother's Full-time Employment when Children School Aged (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)

% Respondents Preferring Mothers' Full-time Employment when Child School-Aged

● low employment   ■ medium/high employment   ——— all countries   – – – excl. countries with low maternal employment
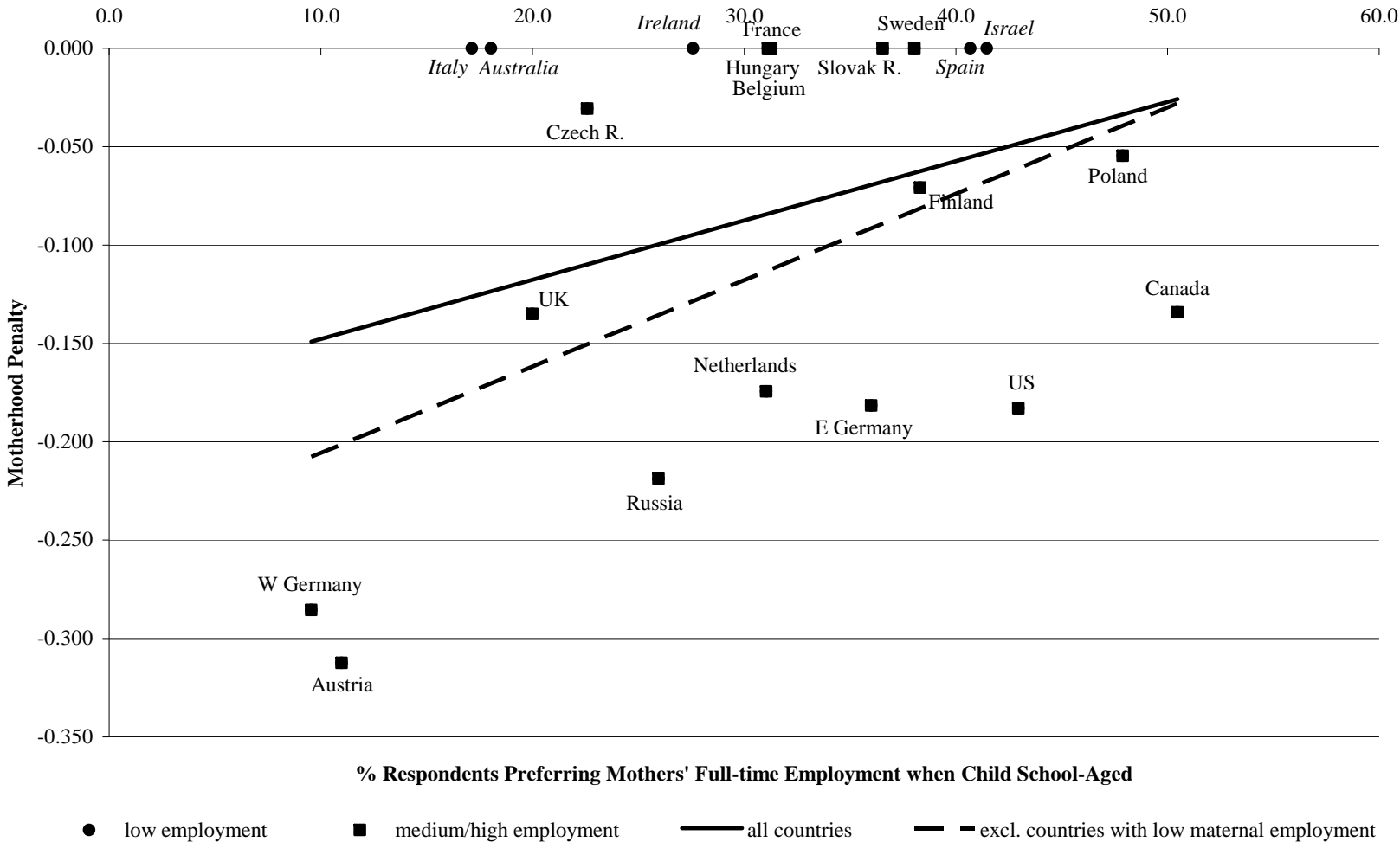
Figure Eight: Association between Cross-National Motherhood Penalties and % of Respondents Agreeing or Strongly Agreeing with: A pre-school child is likely to suffer if his or her mother works (controlling for partnered relationship status age, educational attainment, other household income and other household income squared)