Gendered Parenthood Penalties and Premiums across the Earnings Distribution in Australia, the United Kingdom, and the United States

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ABSTRACT

Parenthood explains some of the gender earnings gap, but effects differ among women and men, and across countries. Wave 6 LIS data and regressions of the recentered influence function are used to compare effects of parenthood across the unconditional earnings distribution in Australia, the United Kingdom, and the United States. The three countries are considered more liberal welfare regimes, but still differ in within- and between-gender economic inequality. Australia has slightly greater income equality than the other two countries. Results reveal that fatherhood premiums and motherhood penalties are smaller in Australia, as are differences between the highest- and lowest-earning parents. Australian and British mothers are more likely to work part-time, but controlling for work hours, motherhood penalties in those countries are smaller across the bottom half of the distribution than in the United States. Motherhood penalties across the upper half of the earnings distribution are more similar in the three countries, and decrease as earnings increase. The lowest-earning men in all three countries face small but significant fatherhood penalties, whereas high-earning British and US fathers garner significant premiums as compared with childless men. Parenthood penalties and premiums therefore reflect relative socioeconomic (dis)advantage among women and men, as well as between them.

Key words: gender earnings gap; international comparisons; unconditional quantile

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Introduction

Gender earnings gaps cannot be explained fully by gender differences in human capital, labor supply, or job characteristics (Albrecht, Björklund, and Vroman, 2003; Blau and Kahn, 2003; Harkness and Waldfogel, 2003; Mandel and Semyonov, 2005; Pettit and Hook, 2009). Penalties and premiums associated with parenthood explain more of the gap. The magnitude of family effects differs across countries, but in general men garner modest fatherhood premiums (Glauber, 2008; Hodges and Budig, 2010; Smith Koslowki, 2011), whereas motherhood predicts a significant earnings penalty for women (Budig and Hodges, 2010; Harkness and Waldfogel, 2003; Sigle-Rushton and Waldfogel, 2007; Waldfogel, 1998).

Comparisons of average effects dominate the empirical literature, but a handful of single-country quantile regression analyses reveal that the impact of individual characteristics varies along the earnings distribution (Albrecht, et al., 2003; Budig and Hodges, 2010; García, Hernández, and López-Nicolás, 2001). One insight from these studies is that earnings penalties and premiums reflect and reinforce relative socioeconomic (dis)advantage among women and among men, as well as between the two genders. As countries differ in their underlying structures of both aggregate and gender inequality, they should differ in the variation in parenthood penalties and premiums across the earnings distribution.

This paper contributes to the literature by comparing the gendered impact of children across the earnings distribution in Australia, the United Kingdom, and the United States. Esping-Andersen (1990) categorized the countries as liberal welfare regimes where individuals are expected to ensure their own well-being via the labor market. Indeed, income inequality after taxes and transfers is greater in the these countries than in northern Europe (Brandolini and Smeeding, 2009: 84), and none of them offers full-time public child care or generous paid parental leaves that support greater gender employment equality (Cooke, 2011; O'Connor, Orloff, and Shaver, 1999).

The three countries contrast, however, in both their aggregate levels of income inequality and gendered employment arrangements that should shape the family effects of interest here. Aggregate levels of British and US income inequality are similar (Brandolini and Smeeding, 2009), whereas the historical strength of the Australian labor movement resulted in guaranteed "family wages" that lessened earnings inequality (Cooke, 2011; Whitehouse, 2004). US women regardless of parental status often work full-time, whereas Australian and British mothers are more likely to work part-time (Gornick and Jacobs, 1996; OECD, 2010: 286; Sigle-Rushton and Waldfogel, 2007; Whitehouse, 2002). The gender wage gap mirrors aggregate income inequality: greatest in the United Kingdom and United States, and smaller in Australia (Blau and Kahn, 2003; OECD, 2010: 295). In this paper we therefore use LIS data circa 2004 and regressions of the recentered influence function (Firpo, Fortin, and Lemieux, 2009) to reveal how these differences in aggregate inequality are reflected in the gendered impact of children across women's and men's earnings distribution in each country.

Gendered Impact of Family on Earnings

In the human capital model, education, on-the-job training, and accumulated work experience predict wages (Becker, 1993; Mincer, 1974). A gendered division of paid and unpaid work associated with family simultaneously hinders partnered women's labor supply and enhances partnered men's ability to devote more time to paid work (Becker, 1985). Women increase their domestic time when they move in with a man, whereas men reduce theirs when they move in with a woman (Gupta, 1999). More recent cohorts of fathers are spending more time in child care, but mothers' remain the primary caregivers (Gauthier, Smeeding, and Furstenberg, 2004).

Thus despite women's rising rates of educational attainment (OECD, 2009), they remain more likely than men to exit employment following the birth of a child and, if they return to work, to reduce their work hours to better balance employment and family demands (Bardasi and Gornick, 2008; Pettit and Hook, 2009; Lundberg and Rose, 2000; Sigle-Rushton and Waldfogel, 2007). Job exits and working part-time reduce accumulated work experience and predict wage penalties for women and men (Bardasi and Gornick, 2008; Gornick and Jacobs, 1996; O'Dorchai, Plasman, and Rycx, 2007). But fatherhood does not necessarily predict any significant change in men's paid (Glauber, 2008; Lundberg and Rose, 2000, 2002) or unpaid work hours (Baxter, Hewitt, and Haynes, 2008). In fact, Smith Koslowski (2011) found that in some European countries, fathers that spent more time caring for their children received significant wage bonuses despite working fewer paid work hours.

In short, net of human capital and labor supply, parenthood has competing effects on women's and men's wages. On the one hand, motherhood predicts a wage penalty, although the size of this penalty varies across countries. In the mid-1990s, having one child predicted a 4, 7, and 8 percent penalty in the log hourly wages of US, Australian, and British mothers, respectively, net of controls for education, experience, region, and ethnicity (Harkness and Waldfogel, 2003). Penalties were greater for two or more children (Harkness and Waldfogel, 2003). Including occupational controls, Whitehouse (2002) found no penalty among Australian mothers with dependent children, and a 5 percent penalty for British mothers. Occupations, however, do not explain as much as structure gender earnings differences. Female-dominated occupations pay less than male-dominated occupations, and women generally hold lower-level positions within occupations (Charles and Grusky, 2004).

Fatherhood, on the other hand, frequently predicts some net earnings premium that varies across countries (Smith Koslowski, 2011). US fathers' wage premium has been estimated at 4 to 9 percent after controlling for selection effects as well as marital status, human capital, and hours of work and other aspects of labor supply (Glauber, 2008; Hodges and Budig, 2010; Lundberg and Rose, 2000, 2002). Estimates of Australian and British fathers' net premiums in the 1990s range from 7 to 10 percent (Smith Koslowski, 2011; Whitehouse, 2002). Unexplained family penalties and premiums therefore reflect and reinforce the household division of labor that structures gender economic inequalities,[1] with specific effects varying across countries.

Recent research finds further group differences in the impact of individual characteristics on earnings. Quantile regression analyses reveal that returns to experience and education vary not only between men and women, but also across each gender's wage distribution (Albrecht, et al., 2003; García, et al., 2001). Hodges and Budig (2010) reported that White, college-educated US men in professional occupations received a larger first-time fatherhood premium than less-advantaged men. Glauber (2008) reported that US Black men's fatherhood hourly wage premium for two or more children was smaller than White or Latino men's premiums. Budig and Hodges' (2010) fixed effects semiparametric quantile regression showed that the proportional size of the US motherhood penalty net of individual characteristics was larger for relatively low-earning as compared with high-earning mothers.

One explanation Budig and Hodges offered for the effects of US women's earnings on motherhood penalties is that higher wages allow women to outsource more domestic tasks. Thus a wife's wages can enhance her paid work productivity much as wives' domestic work was theorized to enhance husbands'. This hypothesis could not be tested directly with Budig and Hodges' (2010) data, but other analyses show that housework time differences between the highest- and lowest-earning US women range from 7 to more than 15 hours per week (Gupta, et al., 2010: 116). Much of this time among highly-educated US mothers, however,

[1] Discrimination that reinforces cultural expectations around motherhood and fatherhood also perpetuates gendered effects of parenthood on employment (Correll, Benard, and Paik, 2007; Hodges and Budig, 2010).

gets reallocated to child care (England and Srivastava, 2013). Furthermore, this argument does not explain greater premiums for higher-earning fathers. The unexplained gendered parenthood effects, coupled with the differences in these within each gender, instead suggest relative (dis)advantage begets further (dis)advantage regardless of other individual characteristics.

We examine this proposition by comparing the impact of children on women's and men's earnings across the unconditional earnings distribution in Australia, the United Kingdom, and the United States. The three countries share a language and basis in British common law, and offer limited public provision of universal full-time child care and paid parental leave (O'Connor, et al., 1999; Mandel and Semyonov, 2005: Table S1). Yet as outlined next, they differ in aggregate inequality and the gendered employment arrangements that we argue affect relative earnings equality within each gender, as well as between them.

Three Variations on a Liberal Theme

Esping-Andersen (1990) categorized the English-speaking countries as liberal welfare regimes that prefer market mechanisms over state intervention, and in turn experience the greater income inequality of less-regulated labor markets (Blau and Kahn, 2003; Pettit and Hook, 2009). Gross as well as disposable income inequality in Australia, the United Kingdom, and the United States is greater than in northern European countries (Brandolini and Smeeding, 2009). Reliance on the labor market for economic well-being encourages employment among all able adults, and so women's labor force participation rates in these three countries are also greater than the OECD average (OECD, 2010: 273). Yet the countries differ in the degree of aggregate income inequality, as well as in key gendered employment arrangements that may affect the impact of children on men's and women's earnings.[2]

The United States adheres most closely to liberal tenets and has the greatest income inequality of affluent market economies (Blau and Kahn, 2003; Brandolini and Smeeding, 2009). The US developed a system of corporate rather than state welfare, such that individuals must be employed to access adequate disability, sickness, and health benefits (O'Connor, et al., 1999). As a result, part-time jobs that offer few benefits are less desirable than full-time jobs. US mothers are therefore almost as likely to be employed full-time as mothers in countries with extensive policy supports for maternal employment (Sigle-Rushton and Waldfogel, 2007). The aggregate income inequality, however, structures a large US gender wage gap (Blau and Kahn, 2003).

British aggregate income inequality is similar to that in the United States (Brandolini and Smeeding, 2009), but gendered employment arrangements differ. Until 1999, social security regulations made it cheaper for British employers to offer several part-time positions rather than a single full-time position, leading to a proliferation of poor-quality, low-wage part-time jobs taken up primarily by married mothers (Cooke, 2011; O'Connor, et al., 1999). Although the regulations changed in 1999, the British government continued to promote women's part-time work with the expansion of public part-time child care places, and by encouraging employers to consider requests for flexible work arrangements for parents of young children (Cooke, 2011). As a result, a similar percentage of adult British women is employed as in the United States, but almost 40 percent of employed British women hold part-time jobs (OECD, 2010: 286). New minimum wages introduced in 1999 improved the

[2] For fuller discussion of the contrasting country policies affecting gender economic equality, see Cooke (2011), O'Connor, et al., (1999), or Whitehouse (2002).

earnings of low-wage British workers, including those working part-time. [3] Yet as of 2008, the unadjusted average British gender earnings gap for all workers was still slightly greater than in the United States (OECD, 2010: 295).

Aggregate income inequality is somewhat less in Australia than in the other two countries. The early 20th Century Australian labor movement won guaranteed family wages for all employed men, sufficient to support a dependent wife and three children (Cooke, 2011; Whitehouse, 2004). By the late 1960s, the trade unions arbitrated for and won a series of comparable worth policies, which are still reflected in the smaller Australian gender wage gap (O'Connor, et al., 1999; OECD, 2010: 295). After the comparable worth victories, the Commonwealth government began to promote women's part-time employment as a work-family balance strategy (Edwards and Magarey, 1995). As a result, the percentage of employed Australian women working part-time increased steadily since the 1970s and is now similar to that in the United Kingdom (OECD, 2010: 286). Australian part-time jobs, as in Britain, offer lower pay than full-time jobs and two-thirds come with no benefits such as pensions, sick leave, or paid holidays (Cooke, 2011).

Overall income inequality and gendered divisions of paid work therefore differ across the three countries, which we hypothesize will manifest as distinct country patterns in parenthood penalties and premiums across the earnings distribution. Hodges and Budig (2010) found that more privileged US men enjoyed larger fatherhood premiums. We similarly expect the fatherhood premium to increase as men's earnings increase in all three countries, but to different degrees. Given the similarly high levels of British and US income inequality, we expect differences in the fatherhood premium across the earnings distribution to be similar and greatest in these two countries (Hypothesis 1a). The Australian family wage, in contrast, embedded fatherhood premiums into the basic wage structure. These wage effects have

[3] See http://www.lowpay.gov.uk/.

eroded as successive Commonwealth governments dismantled the centralized wage bargaining system (Whitehouse, 2004). We still predict, however, that any net fatherhood premium will be smaller in Australia, and that the country's greater wage compression will be reflected in smaller differences in the size of the premium between the highest- and lowest-earning Australian men than in the other two countries (Hypothesis 1b).

Similarly, we anticipate that the US motherhood penalty will be greater among low-earning than high-earning women (Hypothesis 2a). Predictions for Australian and British mothers are complicated by the prevalence of part-time jobs, which are concentrated along the bottom of the wage distribution. Thus Australian and British women regardless of parental status who work part-time are concentrated in lower-paying occupations and industries (Bardasi and Gornick, 2008; Gornick and Jacobs, 1996). This means that motherhood per se may not penalize low-earning Australian and British mothers; the parental penalty has been extracted by their occupational segregation into low-paying part-time work (Bardasi and Gornick, 2008; Gangl and Ziefle, 2009). Higher-earning Australian and British mothers, in contrast are more likely to be working full-time, and thus the motherhood penalty across the upper half of the earnings distribution only is expected to be similar to the US pattern (Hypothesis 2b). Because of the more compressed Australian wage structure, we expect differences in Australian motherhood penalties between the top and bottom of the earnings distribution to be smaller than in the other two countries (Hypothesis 2c).

Method

Data from Wave 6 of the LIS data project (2003 data for Australia; 2004 data for the United Kingdom and the United States) are used to compare the impact of children on women's and men's annual earnings at different percentiles of each gender's earnings distribution. More recent waves of Australian data are not yet harmonized. From each national dataset, we select respondents between the ages of 25 and 59, excluding the self-employed, disabled, and those still in school. Only employed individuals earning more than US$1 are included in the earnings analyses, a criterion that excludes less than 1 percent of any country sample of employed persons. The dependent variable is the natural logarithm of gross annual earnings, equivalized to 2004 US dollars. Annual earnings rather than hourly wages are used, as the national datasets contain information on usually weekly work hours, but not necessarily number of weeks worked. In addition, annual earnings incorporate periods out of the labor force or reduced hours, which are more typical features of mothers' than fathers' employment (Sigle-Rushton and Waldfogel, 2007). Therefore annual earnings rather than hourly wages provide a better picture of overall gender economic disparities shaped by parenthood.

The independent variable of interest is the number of children under the age of 18 in the household. Premiums or penalties can differ with the specific number of children, and not necessarily linearly (Glauber, 2008; Harkness and Waldfogel, 2003; Lundberg and Rose, 2002). Assessing effects using a series of indicator variables for one child, two children, and three or more children against a referent of childless workers revealed that almost all statistically-significant effects are linear (results not shown).[4] The more parsimonious measure of number of children is therefore used.

Mean analyses of earnings or wages dominate the literature, but quantile regression reveals how the impact of individual characteristics shapes relative earnings equality among paid workers. Koenker and Bassett (1978) represent the τ^{th} sample quantile estimator of the τ^{th} population quantile, $\hat{q}_\tau$, as:

$$\hat{q}_\tau = \arg\min_{q} \sum_{i=1}^{N} (\tau - \mathbf{1}\{Y_i - q \leq 0\}) \bullet (Y_i - q). \qquad (1)$$

[4] The exception to this was the 50th percentile of earnings for UK and US men, where exactly two children predicted a significant premium, whereas other parities did not.

The estimator above, however, provides conditional quantile treatment effects. This is not too problematic when including only the independent variable of interest, but adding further controls may affect interpretation. This is because in conditional quantile regression, the coefficients indicate the impact of the variable of interest on the *relatively* lower or higher earnings among groups of persons that share similar characteristics. Thus including the covariates for human capital and labor supply may alter the earnings quantile in which a respondent then falls (Koenker, 2005: 48). In other words, the individuals with the lowest *relative* earnings on the conditional distribution given the covariates are often not the same as those with lowest earnings on the *unconditional* distribution. For example, someone in the 10th percentile of earnings for university graduates is probably not in the same earnings band as someone in the 10th percentile of unconditional earnings. Thus the results such as reported by Budig and Hodges (2010) may not reflect the impact of the independent variables along the unconditional earnings distribution, and interpreting them as such could lead to erroneous conclusions (see Killewald and Bearak's (forthcoming) critique and re-analysis).[5]

Economists have developed procedures using instrumental variables to yield unconditional effects (i.e., Frölich and Melly, 2008). These techniques require suitable instruments, however, which the LIS data do not contain.[6] Instead, Firpo and his colleagues

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[5] In their re-analysis of a replicated sample using unconditional quantile regression with fixed effects, Killewald and Bearak (forthcoming) found that the US motherhood penalty was in fact greatest at the median, but still smallest for the highest-earning women.

[6] Other household labor income has often been used as an instrument when predicting women's wages, as this was theorized to affect whether she was employed, but not her wages if employed. Analyses using this to compute a lambda to control for selection into employment revealed that this is no longer a suitable instrument. Indeed, in contrast to the past, other household labor income tends to predict higher wages for both women and men, even after including the lambda in the earnings model. The lack of suitable instruments also means that the models here cannot control for selection.

(2009) show how a regression of the recentered influence function (RIF) can be used to estimate the unconditional quantile partial effect (UQPE). The influence function is a measure introduced by Hampel (1974) and widely used in robust estimation. After obtaining the quantile regressions results from Equation 1, a kernel density estimator is used to estimate the density of Y, $\hat{f}_Y(\bullet)$,

$$\hat{f}_Y(\hat{q}_\tau) = \frac{1}{N \bullet b} \bullet \sum_{i=1}^{N} \kappa_Y\left(\frac{Y_i - \hat{q}_\tau}{b}\right), \tag{2}$$

where $K_Y(z)$ is a kernel function and b a positive scalar bandwidth. From this, the average marginal effect, $E\,[d\ \mathrm{Pr}\,[Y > q_\tau\,|X]\,/dX]$, can be estimated with an OLS regression (Firpo et al. 2009: 962). The resulting RIF statistic (UQPE) is interpreted as any OLS statistic: the predicted impact of an increase in X at the τ^{th} quantile of the unconditional distribution of Y, holding everything else constant (Firpo et al. 2009). The *rifreg* command in Stata is used to estimate the UQPE of number of children at the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles in the log annual earnings distribution for men and for women in each country, controlling for partnership, human capital, and labor supply.

Partnership effects are captured with an indicator variable (cohabiting or married cannot be distinguished in the datasets), against a referent of single, divorced, or widowed respondents. Having a university degree or higher education is captured with an indicator variable, with individuals with some post-secondary education or less the reference group. Age and its square (divided by 100) are included as a proxy for work experience (Mincer, 1979). This has proven a poor predictor of women's experience because of their tendency to work fewer hours, so also included are usual weekly work hours, along with the square of weekly work hours (divided by 100) to account for labor supply. Other specifications such as log of weekly work hours (Petersen, 1989) resulted in a poorer model fit for women given their more variable work hours and did not alter the parenthood effects of interest here.

Information on public sector employment and ethnicity can only be derived reliably in the US data. Occupations are not included because the analyses assess parenthood effects at different levels of earnings, which already reflect higher or lower-waged occupations. Verifying this, models (not shown) including indicators for low-skill, clerical, service, and professional occupations against a referent of associate professionals yielded substantively identical parenthood effects at each percentile.

Results

Weighted descriptive statistics are presented in Table 1. The majority of the sample is partnered, and on average individuals have one child younger than 18 years of age in the household. In all three countries, more men than women are employed. Slightly more British than US women are employed, whereas the percentage for Australian women is almost 10 points less. Among employed individuals, the gender difference in the mean log of annual earnings is similar across the three countries (.5 to .6). Despite the prevalence of part-time work among Australian and British mothers, the difference in all employed women's average work hours across the three countries is rather small. The difference among men is greater, with British men working 3 to 4 hours more each week on average than men in the other two countries.

[Table 1 about here]

Women's and men's unadjusted weighted log of annual earnings at the different earnings percentiles are displayed in Table 2. Women at each percentile earn less than men. Australian women at the bottom of the earnings distribution earn slightly more than their British and US counterparts, although this advantage disappears above the 50th percentile. The highest-earning Australian men also earn less than the highest-earning British and US men. The unadjusted earnings gap between men at the 10th and 90th percentiles is greatest in the

United States. The United Kingdom has the greatest earnings gap between the highest- and lowest-earning women, and the greatest gender earnings gap at each percentile.

[Table 2 about here]

In the discussion that follows, the exponentiated values of coefficients (100*(e^b-1)) are used to describe effects as the percentage change in earnings at the given percentile in the earnings distribution, as compared with other workers of the same gender at that percentile. As these are proportional effects, a similar percentage effect at the 10th and 90th percentiles would indicate a greater monetary impact at the 90th percentile, as the baseline earnings are greater. Similarly, an effect of equal magnitude for women and men would usually have a greater impact on men's earnings as effects are relative to other men, who on average earn more than women at each percentile (Table 2).

The unconditional quantile partial effects (UQPEs) from the RIF regressions are presented in Table 3. Because of space constraints, only family-related effects will be discussed. I will briefly mention the impact of partnership on earnings given the theoretical importance of a gendered division of household paid and unpaid labor. Australian and British men enjoy partnership premiums of approximately 10 percent across most of the earnings distribution, whereas partnership predicts a significant premium only among low-earning Australian and British women. Among US men, the proportional impact of partnership is much greater at lower earnings and decreases as men's earnings increase. For US women, partnership predicts a small earnings premium (2 percent) that reaches statistical significance only at the 50th and 75th percentiles.

[Table 3 about here]

Turning now to the parenthood effects of interest, Figure 1 displays the (exponentiated) children effects contrasting those on the conditional as compared with unconditional earnings distributions. The top panel presents quantile regression results from Koenker and Bassett's

(1978) estimator, whereas the bottom panel presents UQPEs from the RIF regression results detailed in Table 3. Not surprisingly, parenthood effects on the conditional earnings distribution controlling for partnership, human capital, and work hours (top panel), vary less than on the unconditional earnings distribution (bottom panel).

On the conditional earnings distribution (top panel), the fatherhood premium at the median for each additional child is modest at 2, 3, and 4 percent for Australian, British, and US men, respectively. In support of Hypothesis 1a, the premium does increase as earnings increase, but the increase between the 10th and 90th percentiles ranges from just one (US) to three (Australia and British) percentage points. Hypothesis 1b is not entirely supported. Australian fathers' premiums are smaller than those in the other two countries except at the 75th percentile, but the 90/10 difference is as large as in the United Kingdom.

As predicted in Hypothesis 2a, the US motherhood penalty decreases linearly as earnings on the conditional earnings distribution increase, yielding a 90/10 difference of 6 percentage points. The estimates at the 90th percentile are similar to those reported by Budig and Hodges in their commensurate fixed-effects conditional model (2010: 718, Model 4). The penalty at the 10th percentile reported here, however, is appreciably larger than their fixed effects coefficient. These results suggest some negative selection into motherhood among low-earning, but not high-earning US mothers when controlling for these covariates.

In partial support of Hypothesis 2b, the pattern among Australian and British women is similar as the predicted penalty is smaller than for US women at each percentile, but there is no distinct pattern difference between the top and bottom half of the distribution as was also predicted. It would also be rash to claim that Hypothesis 2c is supported for the conditional earnings distribution, as the 90/10 difference in the Australian motherhood penalty (2 percentage points) is only slightly smaller than the British 90/10 difference (3 percentage points).

[Figure 1 about here]

As noted in the methods section, we would expect larger differences among men and among women when comparing unconditional quantile partial effects (bottom panel). In support of Hypothesis 1a, British and US effect patterns are similar, particularly across the upper half of the earnings distribution. British and US men in the 90th percentile of unconditional earnings are predicted to receive a net fatherhood bonus of 6 and 5 percent, respectively. Of particular note, however, is that men in the 10th percentile of unconditional (rather than conditional) earnings in all three countries are predicted to incur a significant fatherhood *penalty* after controlling for partnership, human capital, and weekly work hours. The low-earning fatherhood penalty is greatest in the United Kingdom at 4 percent, and 2 percent for Australian fathers in the 10th percentile and US fathers in the 10th and 25th percentiles. As hypothesized (H1b), the 90/10 difference among Australian fathers is smaller at 4 percentage points, as compared with 7 in the United States, and 10 percentage points in the United Kingdom.

UQPEs also support the hypothesis that US mothers' penalty would decrease as earnings increase (H2a). US mothers in the 10th percentile of unconditional earnings face a statistically-significant penalty of 16 percent for each additional child. US mothers at the 90th percentile, in contrast, are predicted to be penalized just one percent and the effect is only marginally statistically significant. The US motherhood penalty at the 10th percentile is larger than that found by Killewald and Bearak (forthcoming) in their fixed-effects unconditional quantile analysis, whereas the negligible penalty for the highest-earning US mothers is similar.

As predicted, the Australian and British patterns on the unconditional earnings distribution are indeed similar and different for low- as compared with high-earning women (H2b). The lowest-earning Australian and British mothers enjoy a small motherhood *premium* relative to other low-paid female workers, although only the British effect reaches standard levels of statistical significance. A significant British motherhood penalty emerges by the 25th percentile, whereas none emerges for Australian mothers until the 50th percentile. Gangl and Ziefle's (2009) analysis of British panel data similarly concluded that although British mothers are more likely to work in low-wage part-time jobs, these jobs do not further penalize mothers' earnings as compared with those of childless women. As also hypothesized (H2b), motherhood penalties across the upper half of the earnings distribution in all three countries are similar, and decrease as earnings increase.

Differences among Australian women across the top half of the earnings distribution are smallest as predicted (H2c), with the motherhood penalty decreasing just 2 percentage points between the 50th and 90th percentiles of earnings. The non-linear pattern across the bottom half of the Australian and British earnings distribution provides more mixed support for Hypothesis 2c. The 90/10 penalty difference among Australian mothers is 5 percentage points, identical to the British 90/10 difference. The 50/10 Australian motherhood penalty difference is larger at 7 percentage points, but so, too are the British (11 percentage points) and US (10 percentage points) 50/10 differences among women. Hypothesis 2c is therefore generally supported, with most differences among Australian mothers smaller than in the other two countries.

Discussion and Conclusions

This article fills a void in our understanding of the impact of family on economic equality among and between the two genders in Australia, the United Kingdom, and the United States. Evidence to date suggests that fatherhood predicts some wage premium in most countries (Smith Kozlowski, 2011), which Hodges and Budig (2010) found to be greater among more privileged US men. Similarly, motherhood usually predicts an earnings penalty (Harkness and Waldfogel, 2003; Sigle-Rushton and Waldfogel, 2007), but more recent analyses using conditional (Budig and Hodges 2010) and unconditional quantile regression (Killewald and Bearak, forthcoming) find such a penalty smallest for the highest-earning US mothers.

Here LIS data circa 2004 and RIF regressions are used to estimate the impact of children at different percentiles of women's and men's unconditional earnings distributions. In all three countries, the fatherhood premium—controlling for partnership, human capital, and labor supply—increased as earnings increased. Net premiums for fathers in the top earnings quartile were greatest in the United Kingdom, although only slightly larger than those for similar US fathers. Differences among fathers were smallest in Australia, where overall income inequality is slightly less than in the United Kingdom or United States. Whether the net fatherhood premium across the earnings distribution is consistently smaller in more diverse countries with greater wage compression is a possible topic of future research.

Fatherhood bonuses for most men, however, were anchored by significant net fatherhood penalties for the lowest-earning men in all three countries. Including variables for ethnicity and immigration status available in the US data did not change the low-earning fathers' penalty (results not shown). Being an ethnic minority or an immigrant predicted further earnings penalties at each point of the unconditional earnings distribution that were greater for low- than high-earning US men. This is additional evidence that relative economic (dis)advantage is shaped by the combined impact of group characteristics.

If low-earning men who are more likely to become fathers have less desirable labor market attributes than childless men, controls for selection could eliminate the penalties found here. Comparisons of OLS with fixed-effects models using panel data have revealed some evidence of such negative selection (Hodges and Budig, 2010; Lundberg and Rose, 2002). But results here raise the possibility of competing selection effects across the earnings distribution. The large premium for the highest-earning men could, in contrast to low-earning men, reflect positive selection into fatherhood as compared with high-earning childless men.

If this were the case, the premium would be reduced in either a fixed-effects or other model controlling for selection, which could not be done with the LIS data.

If not selection effects, then some other factor such as employer discrimination is imposing a eugenic function by discouraging reproduction among low-earning men and rewarding it among high-earning men. Only an extension of the experimental design and audit study such as conducted by Correll and her colleagues (2007) to include different types of jobs could ascertain possible employer discrimination among fathers.

Gendered employment arrangements resulted in more dramatic differences in motherhood effects across countries, and across the bottom and top half of the earnings distribution. The linear US motherhood penalty pattern mirrored that of the fatherhood premium pattern, but with a steeper gradient. US mothers at the 10^{th} percentile of earnings faced a 16 percent net penalty for each additional child that decreased to a marginally significant one percent penalty at the 90^{th} percentile. The results for the highest-earning mothers are similar to those found by Killewald and Bearak (forthcoming) in their re-analysis of Budig and Hodges (2010). The larger penalty found here for the lowest-earning women may be attributable to the inability to control for selection in the current models. But the comparison of results also suggests that selection is an issue only among lower-earning US women, a conclusion that needs to be formally tested in future analyses. The difference in the samples may also affect results, as the fixed-effects analyses were of the single cohort in the 1979 National Longitudinal Survey of Youth. Others have found that US parenthood effects vary across cohorts (Lundberg and Rose, 2002) and time periods (Waldfogel, 1998).

Australian and British motherhood effects varied more across the earnings distribution than in the United States. Australian and British mothers are more likely to work part-time than in the United States, but once controlling for weekly work hours, Australian women in the lowest earnings quartile did not incur a motherhood penalty, whereas British mothers at the

10th percentile of earnings were expected to earn a 5 percent premium. Working fewer hours therefore creates gender economic disparities for Australian and British mothers, but mothers do not incur a further penalty vis-à-vis low-waged childless women. These results are consistent with existing literature (Gangl and Ziefle, 2009; Gornick and Jacobs, 1996).

The parental advantage for the lowest-earning Australian and British women disappeared as earnings increased, with the motherhood penalty for each additional child peaking at 4 and 6 percent, respectively, at the median. Across the upper half of the earnings distribution, the pattern of motherhood penalties was more similar in all three countries and decreased as earnings increased. The difference in the penalty between Australian mothers at the 90th and 50th percentiles, however, was less than half that for British or US mothers.

In all, results revealed within- and between-gender parenthood effects that reflect each country's aggregate income inequality in conjunction with gendered employment arrangements. The greater wage equality in Australia is reflected in smaller differences in parenthood effects among women as well as men. These smaller parenthood effects within each gender were coupled with smaller differences in parenthood effects between Australian women and men. Instead, it is the lower likelihood that Australian mothers are employed that structures gender economic inequalities. Whether the greater gender earnings equality would be sustained if more Australian women were employed is an empirical question for future research. Existing comparative evidence of tradeoffs between women's employment levels and gender wage equality suggests not (Blau and Kahn, 2003; Pettit and Hook, 2009).

Despite the differences, parenthood in all three countries reflects relative economic (dis)advantage not only between the two genders, but also among women and among men. The results also revealed that children directly predict further earnings penalties for already low-earning parents and further premiums for already high-earning fathers. Whether having children in fact causes these relative earnings disparities is a test for future research with panel data. But given the reliance on the market for economic well-being in these countries, these findings suggest growing economic inequality for future generations.

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Table 1 Weighted descriptive statistics, Wave 6 LIS data, 25 to 59 year olds not still in school earning more than $1US

	Australia (2003)		**United Kingdom (2004)**		**United States (2004)**	
	Women	**Men**	**Women**	**Men**	**Women**	**Men**
N	*3,519*	*3,939*	*8,657*	*8,283*	*33,259*	*32,174*
% Employed	63	81	77	91	72	84
Log annual earnings (US$) of employed	10.1 (0.68)	10.6 (0.55)	10.1 (0.83)	10.7 (0.60)	10.0 (0.95)	10.5 (0.83)
Number of children < 18 years	.8	.8	.8	.8	.9	.9
	(1.10)	(1.1)	(1.0)	(1.10)	(1.1)	(1.2)
One child	19	17	21	17	22	19
Two children	18	19	19	19	20	19
Three+ children	7	9	6	7	10	11
% Partnered	71	74	61	61	62	65
% University degree +	27	23	26	30	33	31
Age	40.3	40.3	40.8	40.3	41.4	40.7
	(9.4)	(9.5)	(9.4)	(9.5)	(9.6)	(9.6)
Age squared (00)	17.1	17.1	17.6	17.1	18.1	17.5
	(7.7)	(7.8)	(7.9)	(7.9)	(8.0)	(8.0)
Weekly work hours	33.0	41.6	33.5	44.8	35.3	40.4
	(12.3)	(8.1)	(12.6)	(10.3)	(14.0)	(13.8)
Weekly work hours squared (00)	12.4	18.0	12.8	21.1	14.4	18.2
	(7.54)	(5.9)	(8.8)	(10.2)	(8.4)	(9.9)

Table 2 Unadjusted weighted log of annual earnings across the earnings distribution, employed women and men 25 to 59 years of age in Australia, the United Kingdom and the United States, LIS data circa 2004

	Australia (2003)		**United Kingdom (2004)**		**United States (2004)**	
	Women	**Men**	**Women**	**Men**	**Women**	**Men**
10^{th} p	9.3	10.0	9.1	10.1	9.2	9.7
25^{th} p	9.8	10.3	9.6	10.4	9.7	10.1
50^{th} p	10.2	10.6	10.2	10.7	10.3	10.6
75^{th} p	10.5	10.9	10.6	11.1	10.6	11.0
90^{th} p	10.8	11.2	11.0	11.5	11.0	11.4

Table 3. Effects of number of children on predicted log annual earnings from recentered influence function regressions to provide unconditional quantile partial effects (UQPE), Australian, UK and US 25 to 59 year olds, LIS Wave 6 data circa 2004

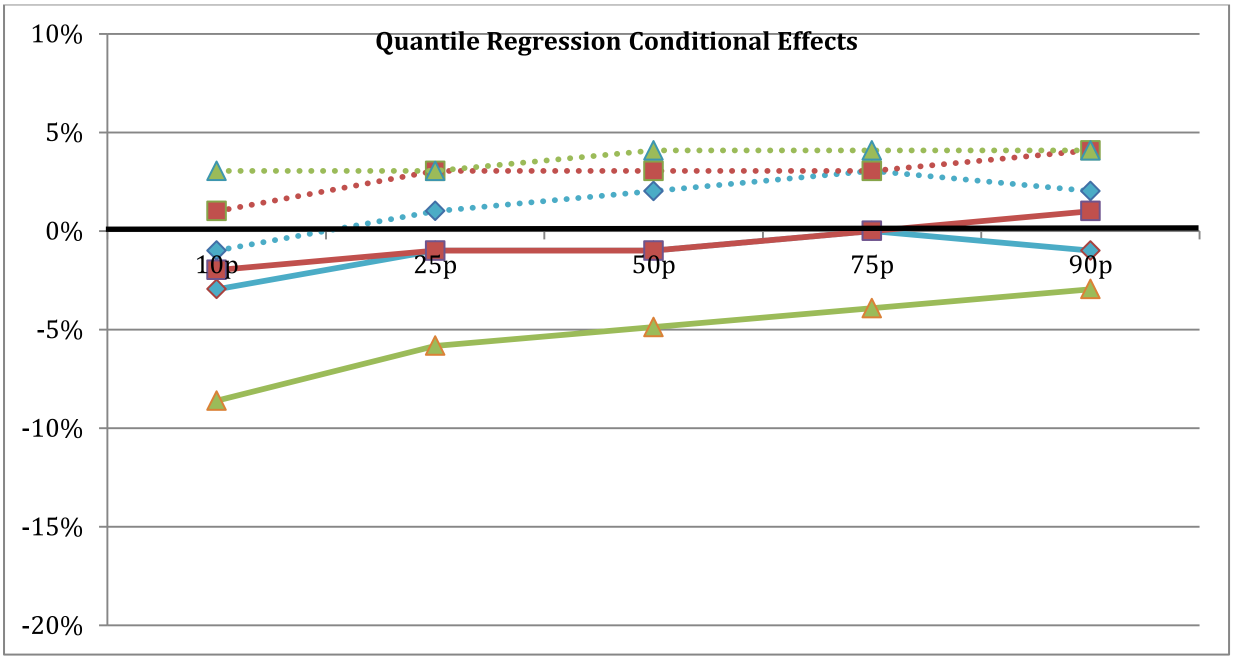
Australia										
	10th p		25th p		50th p		75th p		90th p	
	Women	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**
N=	*3,519*	*3,939*	*3,519*	*3,939*	*3,519*	*3,939*	*3,519*	*3,939*	*3,519*	*3,939*
Number of children < 18	.03 (.03)	-.02* (.01)	-.00 (.01)	-.01 (.01)	-.04*** (.01)	.00 (.01)	-.03** (.01)	.00 (.01)	-.02+ (.01)	.02+ (.01)
Partner	.19*** (.05)	.12*** (.03)	-.00 (.03)	.10*** (.02)	.00 (.02)	.10*** (.02)	-.01 (.02)	.10*** (.02)	.03 (.02)	.05 (.03)
University degree	.20*** (.05)	.12*** (.02)	.25*** (.03)	.21*** (.02)	.35*** (.02)	.36*** (.02)	.48*** (.03)	.44*** (.03)	.42*** (.03)	.50*** (.04)
Age	.06* (.03)	.04*** (.01)	.01 (.01)	.03*** (.01)	.03** (.01)	.04*** (.01)	.06*** (.01)	.03*** (.01)	.05*** (.01)	.01 (.01)
Age squared (00)	-.07* (.03)	-.05*** (.02)	-.01 (.02)	-.04*** (.01)	-.04** (.01)	-.05*** (.01)	-.07*** (.01)	-.03** (.01)	-.06*** (.01)	-.01 (.02)
Weekly work hours	.38*** (.01)	.15*** (.01)	.13*** (.00)	.04*** (.00)	.03*** (.00)	.00 (.00)	-.01** (.00)	-.02*** (.00)	-.02*** (.00)	-.03*** (.01)
Weekly work hours squared (00)	-.50*** (.02)	-.16*** (.01)	-.13*** (.01)	-.02*** (.01)	.00 (.01)	.03*** (.01)	.05*** (.01)	.06*** (.01)	.05*** (.01)	.07*** (.01)
Constant	1.45** (.55)	5.63*** (.30)	7.02*** (.26)	8.17*** (.19)	8.61*** (.20)	8.89*** (.18)	8.97*** (.20)	9.82*** (.19)	9.69*** (.20)	10.78*** (.27)
Adjusted R^2	*.47*	*.28*	*.48*	*.19*	*.38*	*.20*	*.29*	*.18*	*.17*	*.10*

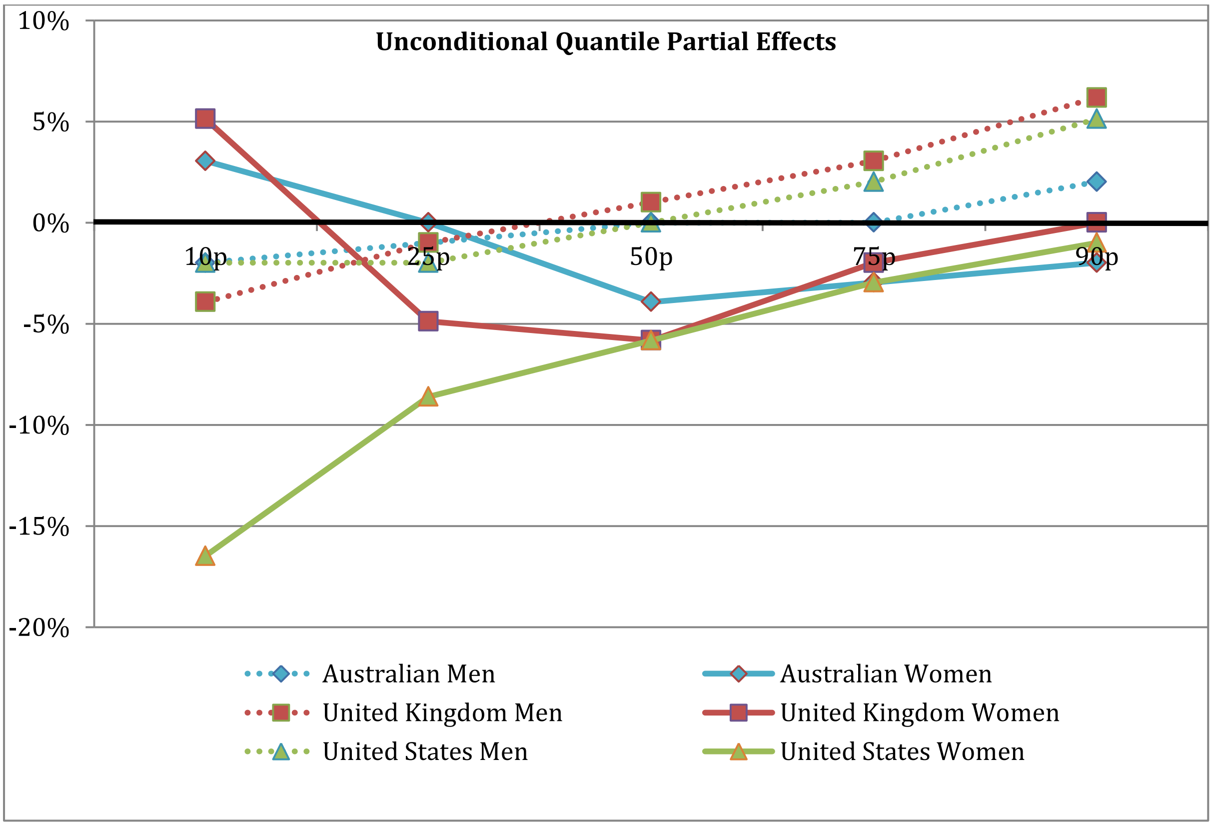
United Kingdom										
	10th p		25th p		50th p		75th p		90th p	
	WOMEN	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**
N=	*8,657*	*8,283*	*8,657*	*8,283*	*8,657*	*8,283*	*8,657*	*8,283*	*8,657*	*8,283*
Number of children < 18	.05*** (.02)	-.04*** (.01)	-.05*** (.01)	-.01 (.01)	-.06*** (.01)	.01 (.01)	-.02+ (.01)	.03*** (.01)	.00 (.01)	.06*** (.01)
Partner	.08*** (.03)	.10*** (.02)	.07** (.02)	.09*** (.02)	.01 (.02)	.09*** (.01)	.01 (.02)	.09*** (.02)	.02 (.02)	.09*** (.02)
University degree	.11*** (.03)	.21*** (.02)	.31*** (.02)	.30*** (.01)	.49*** (.02)	.43*** (.01)	.76*** (.02)	.62*** (.02)	.56*** (.03)	.68*** (.03)
Age	.02 (.01)	.07*** (.01)	.03** (.01)	.07*** (.01)	.03*** (.01)	.08*** (.01)	.07*** (.01)	.08*** (.01)	.06*** (.01)	.06*** (.01)
Age squared (00)	-.02 (.02)	-.08*** (.01)	-.03** (.01)	-.08*** (.01)	-.04*** (.01)	-.09*** (.01)	-.08*** (.01)	-.08** (.01)	-.07*** (.01)	-.06*** (.012)
Weekly work hours	.21*** (.01)	.13*** (.01)	.16*** (.00)	.06*** (.00)	.06*** (.00)	.03*** (.00)	.02*** (.00)	.02*** (.00)	-.00 (.00)	.02*** (.01)
Weekly work hours squared (00)	-.22*** (.01)	-.11*** (.01)	-.15*** (.00)	-.04*** (.00)	-.03*** (.00)	-.02*** (.00)	.02*** (.00)	-.01** (.00)	.04*** (.00)	-.00 (.00)
Constant	4.51*** (.28)	5.02*** (.26)	5.47*** (.21)	7.11*** (.16)	8.15*** (.15)	7.84*** (.13)	8.25*** (.18)	8.25*** (.14)	9.19*** (.18)	8.80*** (.22)
Adjusted R^2	*.39*	*.18*	*.50*	*.15*	*.42*	*.19*	*.32*	*.22*	*.20*	*.13*

United States										
	10th p		25th p		50th p		75th p		90th p	
	WOMEN	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**	**WOMEN**	**MEN**
N=	*33,259*	*32,174*	*33,259*	*32,174*	*33,259*	*32,174*	*33,259*	*32,174*	*33,259*	*32,174*
Number of children < 18	-.18*** (.02)	-.02** (.01)	-.09*** (.01)	-.02*** (.01)	-.06*** (.01)	-.00 (.00)	-.03*** (.00)	.02*** (.00)	-.01+ (.01)	.05*** (.01)
Partner	.01 (.03)	.28*** (.02)	.02 (.01)	.27*** (.01)	.02* (.01)	.23*** (.01)	.02* (.01)	.17*** (.01)	.02 (.01)	.13*** (.01)
University degree	.23*** (.03)	.19*** (.02)	.34*** (.01)	.37*** (.01)	.51*** (.01)	.48*** (.01)	.59*** (.01)	.66*** (.01)	.67*** (.02)	.85*** (.02)
Age	.08*** (.02)	.07*** (.01)	.04*** (.01)	.08*** (.01)	.05*** (.00)	.07*** (.00)	.05*** (.00)	.06*** (.00)	.06*** (.01)	.06*** (.01)
Age squared (00)	-.09*** (.02)	-.08*** (.01)	-.04*** (.01)	-.09*** (.01)	-.05*** (.01)	-.07*** (.00)	-.06*** (.01)	-.06** (.01)	-.06*** (.01)	-.05*** (.01)
Weekly work hours	.16*** (.00)	.05*** (.00)	.05*** (.00)	.02*** (.00)	.02*** (.00)	.009*** (.00)	.01*** (.00)	.001 (.00)	-.00 (.00)	-.006*** (.00)
Weekly work hours squared (00)	-.13*** (.01)	-.03*** (.00)	-.02*** (.00)	-.01*** (.00)	.00 (.00)	.003*** (.00)	.01*** (.00)	.012*** (.00)	.020*** (.00)	.023*** (.00)
Constant	3.53*** (.30)	6.58*** (.16)	7.42*** (.12)	7.30*** (.11)	8.32*** (.08)	8.38*** (.07)	8.87*** (.08)	8.98*** (.08)	9.12*** (.11)	9.47*** (.11)
Adjusted R^2	*.20*	*.11*	*.22*	*.15*	*.22*	*.21*	*.19*	*.21*	*.11*	*.16*

*p <= .10 * p <= .05 ** p<=.01 *** p<=.001*

Figure 1 Effect of number of children on log annual earnings in Australia, the United Kingdom, and the United States, on the conditional (top), and unconditional earnings distributions (bottom), 25 to 59 years old employed individuals, LIS data circa 2004





Notes: Covariates include age, age squared, weekly work hours, weekly work hours squared, partnership, and having a university degree.