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Occupational Inflexibility and Women's Employment During the Transition to Parenthood

Patrick Ishizuka,

Department of Sociology, Washington University in St. Louis

Kelly Musick

Department of Policy Analysis and Management, Cornell University

Abstract

The typical U.S. workplace has adapted little to changes in the family and remains bound to norms of a 40-or-more hour work week. How jobs are structured and remunerated within occupations shapes gender inequality in the labor market, and this may be particularly true at the critical juncture of the transition to parenthood. This study provides novel evidence showing how occupational work hour inflexibility shapes new mothers' employment. It uses a fixed effects approach and individual-level data from nationally representative panels of the Survey of Income and Program Participation (SIPP, N=2,239 women) merged with occupational characteristics from the American Community Survey (ACS). We find that women in pre-birth occupations with higher shares working 40 or more hours per week and higher wage premiums to longer work hours are significantly less likely to be employed post-birth. These associations are small in magnitude and not statistically significant for men, and placebo regressions with childless women show no associations between occupational inflexibility and subsequent employment. Results illustrate how individual employment decisions are jointly constrained by the structure of the labor market and persistent gendered cultural norms about breadwinning and caregiving.

Keywords

Gender; Parenthood; Occupations; Employment

Men's and women's employment patterns diverge following parenthood, with important consequences for gender inequality in the labor market. Whereas men's labor supply remains stable or increases when they become fathers, women's employment and work hours decline significantly (Byker 2016a; Damaske and Frech 2016; Killewald and Zhou 2019; Lu et al. 2017; Lundberg and Rose 2002; Musick, Bea, and Gonalons-Pons 2020). Reductions in mothers' cumulative work experience due to employment gaps, in turn, account for a large portion of both the motherhood wage penalty and gender wage gap (Aisenbrey et al. 2009; Blau and Kahn 2017; Budig and England 2001; Gangl and Ziefle 2009). Even short work interruptions can result in substantial long-term wage and career costs (Bertrand et al. 2010; England et al. 2016). Parenthood-related gaps in employment are penalized in hiring (Weisshaar 2018), and work adjustments following birth appear to

have long-lasting effects on gender specialization in paid and unpaid work (Byker 2016b; Patnaik 2019; Rege and Solli 2013). Thus, despite the narrowing of human capital gaps between men and women (DiPrete and Buchmann 2013; Goldin 2006), men continue to earn more than women, and gender gaps in earnings widen over the life course (Goldin 2014). Identifying factors that shape women's employment responses to parenthood is crucial for understanding gender inequality in the labor market.

Goldin (2014) argues that the "last chapter" in the long progression to gender equality in employment and earnings is in changing how jobs are structured and remunerated to allow for flexibility in work hours. She shows that this change has taken off in some high-earning occupations but not others, and she links indicators of job hour inflexibility within occupations to greater gender gaps in pay. Relative to other advanced industrialized countries, U.S. workplaces have adapted little to changes in the family and remain bound to norms of a full-time, full-year worker without constraints on availability (Collins 2019; Gornick and Myers 2003; Kalleberg 2011; Williams 2000). A 40-or-more hour work week remains the standard, despite preferences to work less among many men and women, particularly at the transition to parenthood (Reynolds and Johnson 2012). These work hour norms and practices, combined with a lack of institutional support for reduced and flexible hours, impose significant wage penalties on employees who want fewer hours and more flexible employment (Cha and Weeden 2014; Mas and Pallais 2017; Weeden et al. 2016). Qualitative accounts have described in rich detail how inflexibility in work hours generates work-family conflict that ultimately pushes mothers out of the labor force (Stone 2007).

We build on this line of research, advancing the literature on work hour inflexibility and gender inequality in the labor market in three key ways. First, following Goldin (2014) and others, we argue that the way work hours are organized and compensated at the occupation level produces gender differences in employment, and we extend this research to examine the prevalence of the 40-or-more hour work week and wage premiums to longer hours across a broad range of occupations. Second, we examine the link between occupational inflexibility and employment at the critical juncture of parenthood, asking whether higher levels of occupational inflexibility are associated with job-leaving following the transition to first birth, particularly among mothers. Third, we link detailed occupation-level data on work hour inflexibility from the American Community Survey (ACS) to large, nationally representative panels of men and women from the Survey of Income and Program Participation (SIPP), allowing us to directly measure the structure and remuneration of work hours in occupations and assess their role in shaping the employment outcomes of new mothers and fathers. Our approach sheds light on how individual employment decisions are jointly constrained by the structure of the labor market and persistent gendered cultural norms about breadwinning and caregiving.

Background

Workplace Organization and Gendered Employment Following Parenthood

A key premise of our work is that occupations are an important but understudied site of workplace organization relevant to both work hour inflexibility and mothers' employment. Weeden and Grusky (2005) find that detailed occupations explain much of the variation

in working long hours (49+ hours), working full-time, and weekly work hours, net of individual and family characteristics. They argue that work hour norms diffuse at the occupation level and are internalized by workers, and that work practices embedded in institutional contexts further constrain individual discretion over work hours (see also Berg et al. 2004; Landivar 2014; Yu 2009). Workers may feel pressure to demonstrate their devotion to work by conforming to work hour norms (Blair-Loy 2003; Cha and Weeden 2014; Turco 2010), and they may find it difficult to find a job with more accommodating hours within the same occupation (Cortés and Pan 2017).

Goldin (2014) shows how work hour inflexibility operates at the occupational level and is differentially associated with men's and women's employment and earnings. Occupations disproportionately reward longer work hours when employees are less-effective substitutes for one another. For example, in business occupations, the importance of personal relationships and "face time" increases the value of a specific employee working longer and particular hours. By contrast, in pharmacy, technological changes and the shift to retail chain and hospital employment have meant that one pharmacist can easily pick up where another left off, and that there is little gain to working longer hours (Goldin and Katz 2011). These occupational differences play into gendered employment outcomes: relative to women in business who face substantial penalties to reduced hours and few reduced hour options, it is more common for women in pharmacy to work part-time, and less common for them to take time out of the labor force (Bertrand et al. 2010; Goldin and Katz 2016).

Occupational work hour inflexibility should pose particular challenges for women at the critical juncture of parenthood. The caretaking and housework demands introduced by a new child are disproportionately borne by women (Baxter et al. 2008; Gjerdingen and Center 2005; Killewald and García-Manglano 2016; Sanchez and Thomson 1997; Yavorsky et al. 2015), even when employed full time (Musick et al. 2016; Raley et al. 2012). The increase in family responsibilities at the transition to parenthood heightens mothers' work-family conflict and contributes to their labor force withdrawals (Glass and Camarrig 1992 Glass and Riley 1998; Stone 2007). Gendered patterns of work at home and in the labor market continue to be shaped by cultural norms that tie fatherhood primarily to full-time employment and motherhood to time-intensive, child-centered caregiving (Blair-Loy 2003; Hays 1997; Jacobs and Gerson 2016; Ridgeway 2011; Townsend 2002). They leave mothers more time-constrained in managing inflexibility on the job.

Work Hour Inflexibility

Relative to other advanced industrialized countries, the U.S. provides little institutional support for mitigating work hour inflexibility (Collins 2019; Glass et al. 2018; Gornick and Myers 2003; Kalleberg 2011). Cross-national evidence shows that women's employment is higher in countries with more part-time work and policies that support flexible work time and proportional pay for reduced hours (Blau and Kahn 2013; Pettit and Hook 2009; Gornick and Myers 2004). U.S. women have lost ground to other OECD countries in labor force participation rates, and nearly a third of the relative declines can be traced to a lack of work-family policies, including part-time work entitlements, equal treatment for part-time workers, and paid parental leave (Blau and Kahn 2013). Many European countries

have also reduced their standard full-time work week to a more "family-friendly" range below 40 hours (Gornick and Myers 2004), while work hour standards in the U.S. have remained comparatively stable. The typical U.S. workplace continues to abide by the ideal, always-available-worker norm, and this "all-or-nothing" structure does not align well with caregiving responsibilities (Acker 1990; Correll et al. 2014; Goldin 2014; Kelly et al. 2010; Moen and Roehling 2005; Williams 2000). The lack of flexibility in work and family domains generates time constraints that are difficult to resolve (Clarkberg and Moen 2001; Jacobs and Gerson 2004; Reynolds and Johnson 2012; Stone 2007; Williams 2010).

Opportunities to reduce work hours below the 40-hour standard may be especially consequential for new mothers' employment. Although long hours or "overwork" (typically defined as working 50+ hours per week) is an important dimension of work hour inflexibility (e.g., Cha 2013; Cha and Weeden 2014; Cortés and Pan 2019; Weeden et al. 2016), the 40-hour full-time standard is the critical threshold for the modal working mother. Women in the U.S. work on average about 40 hours per week but would prefer to work closer to 30 (Jacobs and Gerson 2004; Kalleberg 2007), and mismatches between ideal and actual hours increase at the transition to parenthood (Reynolds and Johnson 2012). Workers' stated ideal work hours map poorly onto a labor market that offers few options between the standard 40-or-more hour work week and part-time jobs of less than 20 hours a week, often without benefits (Jacobs and Gerson 2004; Gornick and Myers 2004). Stone's qualitative account of "opting out" among professional mothers supports this notion: all of her subjects cited the inability to obtain "viable, meaningful, and valued alternatives to full-time work" as a major reason for job-leaving (Stone 2007:101).

The economic costs of work hours reductions further limit work hour flexibility in ways that bear on employment decisions. In the context of ideal worker norms and a lack of institutional support for proportional pay and benefits for reduced work hours in the U.S., shorter hours and more flexible employment come with significant wage penalties (Cha and Weeden 2014; Gornick and Myers 2004; Mas and Pallais 2017; Weeden et al. 2016). The lower remuneration reduces the benefit of employment relative to dropping out of the labor force (Jacobs and Gerson 2004; Goldin 2014). It also discourages workers from considering reduced work hours; for example, in data from the 1992 National Study of the Changing Workforce and 1998 General Social Survey, workers' preferences for work hour reductions were weaker when the economic costs of work hour reductions were made salient or changes in pay were disproportional to earnings (Jacob and Gerson 2004). The system of employer-provided health insurance in the U.S. further contributes to the costs of reduced work hours for employers and employees. As a fixed cost of employment, health insurance is typically tied to full-time hours, and the potential loss of health insurance presents a major hurdle to dropping below full-time (Kalleberg 2011), especially for men and women not covered by a spouse.

Occupational Variation in Work Hour Inflexibility and Mothers' Employment

Our approach focuses on the transition to motherhood and the constraints on employment imposed by work hour inflexibility at the occupational level—in particular, the prevalence of the 40-or-more hour work week and wage premiums to longer hours. A small body

of studies documents occupational differences in mothers' employment, finding evidence consistent with greater flexibility in work hours among women in professional and managerial occupations. Landivar (2014) described variation across 92 occupations in motherhood employment penalties using cross-sectional data from the ACS. She found that mothers in managerial and professional occupations came closest to their counterparts without children in employment, but they also had the biggest gaps in work hours relative to women without children, suggesting that these occupations offered more flexibility to "scale back" work hours in response to family circumstances. Damaske and Frech (2016) used group-based trajectories and panel data from the National Longitudinal Survey of Youth (NLSY79) to chart women's employment experiences across adulthood based on socioeconomic, work, and family characteristics at age 25. They found that women working in professional occupations at age 25 were both more likely to experience decreasing hours and overwork relative to women in the service sector. Lu et al. (2017) used sequence analysis and SIPP panel data to chart women's short-term employment patterns in the year following childbirth. They showed that women in professional and managerial jobs were more likely to remain continuously employed following birth, whereas women in service, sales, and clerical jobs were more likely to drop out of work. In line with Landivar (2014), Lu and colleagues posited that these differences may be due to the relative flexibility and autonomy of white collar jobs compared to blue-collar and service jobs, although mechanisms were not tested directly.

Recent studies have further explored mechanisms, examining how particular indicators of work hour inflexibility at the occupational level are associated with mother's employment. Goldin (2014) showed that face time requirements within high-earning occupations were associated with differences in women's wages in occupations such as business, health, science, and technology. Using panel data from the SIPP, Cha (2013) focused on male-dominated occupations as a proxy for norms of overwork, and she showed that mothers working 50 hours or more per week in these occupations were more likely to leave the labor force. Drawing from a cross section of 18 industrialized countries, Cortés and Pan (2017) also found that there were fewer ever-married women (their partial proxy for motherhood) in occupations with a high prevalence of overwork. Conversely, elite college-educated women in pre-birth workplaces with a higher share of part-time workers were more likely to remain in the labor force 15 years after childbirth (Herr and Wolfram 2012). Qualitative accounts document the resistance mothers face from employers in time-intensive professional and managerial occupations when they request reduced hours (Blair-Loy 2003; Stone 2007; Webber and Williams 2008).

Wage premiums to longer hours at the occupation level are another indicator of work hour inflexibility associated with gendered labor market outcomes. Cross-sectional data show that gender wage gaps are larger in occupations with higher wage premiums to longer work hours (Cha and Weeden 2014; Cortés and Pan 2019; Goldin 2014), presumably because caregiving demands limit women's ability to work longer hours in such occupations. Among women and men who remain in the labor force, changes at the occupation level in both the prevalence of longer hours and how longer hours are rewarded have contributed to stalled progress toward gender wage equality (Cha and Weeden 2014). Longitudinal data provides evidence linking wage premiums to maternal employment in Denmark. Danish women

working in pre-birth occupations with higher wage returns to longer hours were more likely to shift out of the private sector and into the more family-friendly—and lower paid—public sector following a birth (Petrold-Gebicka et al. 2016).

In sum, prior literature shows significant occupational variation in work hours and wage premiums to longer hours. Studies further suggest that the structure and compensation of work hours at the occupation level shape mothers' work-related outcomes, although direct evidence is limited, particularly around the transition to parenthood. Much of the prior work in this area uses cross-sectional data to look at broad occupational classes, often among non-representative samples, college-graduates, or high-wage workers. Our study extends this line of research. It is novel in using nationally representative individual-level panel data merged with direct occupation-level measures of work hours and their compensation to assess how new parents' employment is shaped by pre-birth occupational work hour inflexibility. It is also unique in comparing within-person employment changes among mothers, fathers, and childless women to differentiate between general employment patterns affecting all workers in an occupation and workplace processes that are distinctly disadvantaging to mothers.

Our Study

We examine how the prevalence of the 40-or-more hour work week and wage returns to longer hours interact with the demands of new motherhood to constrain employment. Given gendered parenting norms and patterns of caregiving, we posit that occupational work hour inflexibility will reduce mothers' employment but not fathers'. We further hypothesize that occupational inflexibility will be inconsequential for women without the intensive caregiving demands of young children. To test our hypotheses, we estimate the association between pre-birth occupational work hour inflexibility and subsequent employment among new mothers and new fathers, and we test the robustness of our findings with samples of women who remain childless and mothers prior to pregnancy. We merge recent, nationally representative individual-level panel data from the SIPP with occupation-level measures from the ACS. Individual-level panel data allow us to establish temporal ordering in the relationship between pre-birth occupational work hour inflexibility and post-birth employment and to account for time-invariant factors that may be associated with both occupational choices and employment – such as orientation toward work and family – with individual fixed effects.

Our analytic strategy provides traction in rigorously evaluating our argument that occupational work hour inflexibility constrains mothers' employment specifically. We estimate parallel models for men and women transitioning to parenthood to assess the interaction of parenthood, gender, and occupational work hour inflexibility in generating work-family conflict and in turn employment exits. To further address the possibility that occupational variation in gendered employment patterns for new parents is confounded by factors independent of parenthood, we conduct placebo regressions with women who remain childless throughout the SIPP panels, randomly assigning a "placebo" birth to childless women and assessing whether pre-placebo birth occupational work hour inflexibility predicts subsequent employment. Finally, for a subset of women who are observed at least three years prior to a first birth, we conduct an additional falsification test to examine

whether occupational inflexibility measured more than three years prior to a birth predicts employment in the year prior to a pregnancy.

Our models control for a number of individual- and occupational-level factors that could confound the relationship between pre-birth occupational work hour inflexibility and post-birth employment. At the individual-level, these include person fixed effects, calendar year dummies, and socio-demographic characteristics like age, school enrollment, income of other household members, region, and higher-order births during the observation period. Given that husbands' long work hours increase the chances that women exit the labor force (Cha 2010; Shafer 2011; Stone 2007), we also adjust for combinations of partnership status and partners' working hours for both men and women (unpartnered, partner not employed, employed part-time, full-time, and overworking). We control separately for marital status.[1] Because own work hours and wages may be endogenous to employment changes, we include these measures only in supplementary models. In our results section, we report on the robustness of our results to the inclusion of several time-invariant conventional individual predictors of maternal employment (pre-birth education, wages, work hours, job tenure, race and ethnicity, and age at birth) interacted with motherhood status.

At the occupational level, we include interactions between the transition to parenthood and mean occupational wages, education, and share unemployed. Longer work hours and higher wage premiums to longer hours tend to be correlated with higher wages, more educated workers, and more job stability (Cha and Weeden 2014; Jacobs and Gerson 2004; Kalleberg 2011). Accounting for mean occupational wages interacted with motherhood status, for example, allows us to estimate how the prevalence of longer hours and wage premium to longer hours are associated with employment, net of the average economic rewards of employment in a particular occupation, which should increase women's economic incentive to continue working.

Data and Method

Individual-Level Panel Data and Samples

SIPP panels.—We track changes in employment around the transition to parenthood using data from the 2004 and 2008 SIPP panels. These panels are nationally representative and include rich, monthly information on family transitions, employment, occupation, and income of all household members based on interviews conducted every four months. The 2004 panel follows respondents for up to 48 months, and the 2008 panel for up to 64 months.

The SIPP panels have multiple advantages for our analysis. First, samples are large enough to identify transitions to a first birth with sufficient statistical power to evaluate our hypotheses. Second, the data present a relatively recent portrait of the U.S. population (2004–2013). Third, high-quality monthly measures of employment and income for all adults in the household allow us to time employment changes relative to birth month

[1] In combination with the partnership and partner employment indicators in multivariable models, marital status captures the distinction between married and cohabiting individuals.

and to account for potentially important confounders of the relationship between pre-birth occupational inflexibility and post-birth employment, such as household economic need. Finally, the panel structure of the data and inclusion of men and childless women provide leverage in netting out stable characteristics of individuals and testing the predictions of our theoretical model.

Samples.—We restrict our main sample to women of childbearing age (18–45) who were childless when first observed in the SIPP (*N*=29,183), added a newborn child to the household during the panel (*N*=3,192), and were observed working in any of 24 months prior to first birth (*N*=2,281). We further exclude women with missing data on covariates, for a final sample of 2,239 women. To track birth transitions and employment changes over the panel, we convert this person-level file to a person-month file and follow women from approximately one year prior to a first birth to up to three years following the birth. Because of variation in the timing of birth transitions over the panels, we have an unbalanced panel that varies in the number of months women are observed pre- and post-birth. Women in our main sample are observed for an average of 35 months, and our final person-month sample of women who transition to motherhood includes 77,912 records.

We follow analogous procedures for generating our comparison samples of fathers and childless women. Our sample of fathers includes 1,667 men (*N*=54,281 person-months) who were observed both pre- and post-birth and who were working during at least one pre-birth observation. Because we do not have fertility histories for our sample and code childbirth on the basis of household rosters, we are unable to observe new parenthood for those who live apart from their children over the entire panel. While this is very rare among mothers, it is more common among fathers (Killewald 2013). All fathers in our sample are thus married or cohabiting with the child's mother at some point post-birth, but there are some unpartnered (non-coresidential) person-month observations. Our comparison sample of childless women includes 16,915 women (*N*=439,449 person-month observations) who had no children at any point during the SIPP.

Individual-Level Measures

Transitions to first birth.—We construct a dichotomous indicator of parental status using information on household relationships and child age to identify the month in which a newborn child appeared in the household. In additional analyses, we create a set of dummy variables to assess years since the first birth. Although transitions to higher-order births are relatively uncommon given right censoring and a maximum of 36 months of follow-up in our sample, we include a time-varying indicator for the number of additional births beyond the first.

Employment.—We construct a monthly employment indicator based on questions about whether the respondent had a job for an employer, business, or another work arrangement during the reference month. We prefer this measure to labor force participation (employed or seeking employment) because time not employed for whatever reason should be associated with occupational work hour inflexibility and have similarly negative consequences for career trajectories and human capital depreciation (Bertrand et al. 2010; Mincer and Ofek

1982). Because our interest is in whether new mothers are working for pay (whether for an employer or in their own business), we also include the self-employed. We report below on the sensitivity of our results to our measurement of employment status.

Pre-birth occupation.—The SIPP collected occupation data at the three-digit level (*N*=504 occupations) for every job the respondent worked over the panel. We select occupations from the employment observation closest to 12 months prior to first birth, and we merge these occupation codes to occupational work hour measures assessed in the ACS (see below). We take the occupation measured 12 months prior to birth in an effort to identify occupational characteristics that are relevant to post-birth employment decisions without simultaneously capturing occupational changes in anticipation of a birth. Depending on when births occur relative to the start and end of the SIPP panel, non-participation in a given wave of the SIPP, and movements into and out of employment across months, there is some variation in the timing of this measurement. Most observations are taken from exactly 12 months prior to the birth (55%), 40% are from less than 12 months pre-birth, and the other 5 percent are from more than 12 months pre-birth. Just under a quarter (24%) of women in our sample changed occupations between 24 months pre-birth and the birth month. We test the sensitivity of our findings to multiple alternative pre-birth reference points.

Individual-level controls.—All models include individual fixed effects, single calendar year dummies, logged income of other household members, age, whether currently enrolled in school, region (West, Midwest, Northeast, South), combinations of partnership status and partner work hours, and marital status. Table 1 presents descriptive statistics on individual- and occupation level variables measured at the first pre-birth work observation for our analytic sample of women and men who transition to parenthood during the SIPP panels.

Occupation-Level Data and Measures

We use data on working-age (18–65), employed men and women from the pooled 2004–2013 ACS to generate occupation-level characteristics. The ACS is a nationally representative household survey that includes information on demographic characteristics, occupations, work hours, and wages for large U.S. samples. The large samples of the ACS allow us to collapse information at the detailed occupation level and generate aggregated measures of occupational work hour inflexibility. Our sample for estimating these occupation-level measures includes over 12 million men and women (*N*=12,057,661) working in 541 occupations.[2] Estimating occupational characteristics from both male and female workers reduces measurement error due to small samples in highly gender-segregated occupations; we test the robustness of our results to occupational measures drawn only from male workers.

The ACS has several other advantages for our study. First, the ACS covers the same period as the SIPP data, which is important given changes over time in the prevalence of and wage premiums to working longer hours (Cha and Weeden 2014). Second, the ACS allows us to

[2]Because the SIPP aggregates some occupations, there are fewer SIPP occupation codes (504) than ACS occupation codes (541). For aggregated occupations, we take the average of occupational characteristics.

construct alternative measures of work hour inflexibility to evaluate the robustness of our findings. Finally, the data enable us to measure key occupation-level control variables that may be correlated with both work hour inflexibility and employment.

Work hour inflexibility.—Our first indicator of occupational work hour inflexibility is the *prevalence of the 40-or-more hour work week*, or proportion of workers in a given occupation who work at least 40 hours per week. Our second indicator is the *wage return to working longer hours* in an occupation. To estimate the occupational average wage return to working longer hours, we follow a regression-based approach similar to that of Cortés and Pan (2019) and Goldin (2014) to capture the slope of the relationship between longer work hours and wages in each occupation (see Appendix Note 1). Higher values indicate higher premiums to longer hours and steeper penalties to reduced hours.

Occupation-level controls.—We include interactions between parental status and other pre-birth occupational characteristics that may confound the relationship between occupational work hour inflexibility and employment, including mean log hourly wages, mean years of education, and the share of workers currently unemployed in the occupation.

Fixed Effects Approach

We leverage the SIPP's monthly data on labor force participation and entry into parenthood over the course of the panel to assess changes in employment following first birth. Our main specification includes women who have a first birth in the panel and relies on a dichotomous indicator that collapses monthly birth timing into the months before and after the transition to parenthood to identify within-person changes (Kuziemko et al. 2018). Because our interest is in how employment is influenced by indicators of women's pre-birth occupational work hour inflexibility, we include interactions between our time-invariant pre-birth occupational characteristics and time-varying parental status indicator. This approach allows us to estimate whether within-person employment changes following the transition to parenthood depend on levels of pre-birth occupational work hour inflexibility.

Our analysis takes the form of a linear probability model with individual fixed effects and can be written:

$$\begin{aligned} Working_{it} = {} & \alpha_i + \beta_1 Parent_{it} + \beta_2 OccShareFortyPlus_i * Parent_{it} \\ & + \beta_3 OccHoursWagePremium_i * Parent_{it} + \beta_j \sum_{j=1}^{J} OccControls_i * Parent_{it} \\ & + \beta_k \sum_{k=1}^{K} X_{it} + e_{it} \end{aligned}$$

where i indexes individuals, t indexes time in months relative to the birth, and α_i is an individual fixed effect. *Parent* is a time-varying indicator for the transition to parenthood, *OccShareFortyPlus*Parent* is an interaction between the prevalence of 40-or-more hour work weeks in an individual's pre-birth occupation and their parental status, and *OccHoursWagePremium*Parent* is an interaction between the wage return to longer hours in an individual's pre-birth occupation and parental status. The model includes a

vector of time-varying individual-level controls and interactions between parental status and occupation-level controls: mean log hourly wages, mean years of education, and the share of workers who are unemployed.

We prefer fixed-effect linear probability models (LPMs) over fixed-effect logit models in estimating employment changes following birth because LPMs allow us to preserve a larger sample (maximizing our statistical power). We prefer LPMs over random-effect logit models because LPMs enable us to isolate within-person changes in employment based on pre-birth occupational inflexibility. Interpreting interactions and comparing estimates across LPM models is also more straightforward. We report below on the robustness of our findings to alternative model specifications.

We estimate separate models for our main sample of women who transition to a first birth, as well as our comparison samples: men who transition to a first birth, childless women assigned a "placebo" birth, and mothers prior to pregnancy. To construct our "placebo" birth sample, we restrict our analyses to women who are childless at first observation in the SIPP and who remain childless throughout the SIPP panel. We then assign a placebo birth in a random month for each woman and identify the work observation closest to 12 months prior to the placebo birth month. For our analysis of mothers prior to pregnancy, we examine whether occupational work hour inflexibility measured at least three years prior to a birth affects employment up to one year prior to birth. Because events that have not yet occurred or did not actually occur can have no causal effects, these placebo regressions provide important analytical leverage in testing our theoretical model.

Results

Occupational Work Hour Inflexibility

Our indicators of work hour inflexibility demonstrate substantial variability across occupations. Figure 1a shows that the prevalence the 40-or-more hour work week is right skewed with a mean of 0.78 and a standard deviation of 0.17. This indicates that in a typical occupation, 78% of employees work 40 or more weekly work hours—and that 40 or more hours is the norm. Figure 1a shows that there is also significant variation across occupations in the prevalence of 40-or-more hour work weeks. For example, whereas only 50 percent of childcare workers, 56 percent of registered nurses, and 73 percent of pharmacists work 40 or more hours per week, 90 percent of public relations managers, 92 percent of marketing and sales managers, and 96 percent of police officers work 40 or more hours per week.

Figure 1b shows that the estimated slope of the relationship between longer work hours and wages is approximately normally distributed with a mean of 0.87 and a standard deviation of 0.20. Importantly, almost all occupations reward longer hours with higher wages (as indicated by the positive coefficient), but there is also significant variation across occupations in the extent to which longer hours translate into higher hourly wages. The estimated wage premium to longer hours for dentists is 0.61 (the 8^{th} percentile), 0.64 for massage therapists (11^{th} percentile), and 0.77 for teacher assistants (26^{th} percentile), but this rises to 1.00 for computer scientists and system analysts (75^{th} percentile), 1.10 for

advertising and promotions managers (91st percentile), and 1.13 for financial managers (93rd percentile).

To evaluate what types of occupations and workplaces tend to have higher levels of work hour inflexibility, we examine how the structure and compensation of work hours vary across major occupational groupings and by average worker and job characteristics. The first panel of Appendix Table A1 shows that male-dominated occupational groups such as construction, extraction, and maintenance; production, transportation, and material moving occupations; and military occupations tend to have a higher prevalence of 40-or-more hour work weeks but relatively low wage returns to longer hours. Consistent with these patterns, we find that the occupational share female is negatively correlated with the prevalence of 40-or-more hour work weeks but positively correlated with the work hour wage premium. In addition, professional, managerial, and related occupations have both a relatively high prevalence of 40-or-more hour work weeks and high wage returns to longer hours, whereas service occupations have both a lower prevalence of 40-or-more hour work weeks and lower wage returns to longer hours. Additional occupation-level correlates of work hour inflexibility indicate, for example, that occupations with more hourly workers and more self-employed workers have a lower prevalence of 40-or-more hour work weeks, and occupations with more unionized workers and more self-employed workers have lower work hour wage premiums (see the second panel of Appendix Table A1).

Employment Patterns around the Transition to Parenthood

Figure 2 plots the share of women and men working in the two years prior to a first birth and up to three years following the birth. A significant share of women stops working in anticipation of the birth and in the early months following the birth. By three years post-birth, women's employment has not returned to its pre-birth level. Because men's employment remains high prior to the birth and shows no discontinuity post-birth, the gender employment gap increases significantly at the transition to parenthood.

Multivariable Regression Results

Multivariable regression results assess how pre-birth occupational work hour inflexibility is associated with post-birth employment, net of individual fixed effects and individual and occupational controls. Table 2 shows a summary of key results from linear probability models of employment estimated separately for our main sample of women who transition to parenthood and our comparison samples; Appendix Table A2 shows our full model estimates. Results are not sensitive to our approach to selecting the pre-birth occupation (see Appendix Figure A1, panels 1 and 2). For mothers (Table 2, column 1), results strongly support our hypothesis that pre-birth occupational work hour inflexibility reduces post-birth employment. The interaction between motherhood status and the share of workers in women's pre-birth occupation that work 40-or-more hours per week is large, negative, and statistically significant. A one standard deviation increase in the share of 40-or-more hour workers in an occupation (0.17) is associated with a 2.9 percentage point lower probability of mothers working post-birth. The interaction between motherhood status and the occupational wage return to longer hours is also large, negative, and statistically significant. A one standard deviation increase in the wage premium to an additional hour of

work in an occupation (0.20) is associated with a 2.5 percentage point lower probability of currently working.

Results for fathers (Table 2, column 2) are also consistent with our expectation that pre-birth occupational work hour inflexibility would be inconsequential for their post-birth employment. Interactions between fatherhood status and pre-birth occupational work hour inflexibility are much smaller in magnitude and neither is statistically significant. These analyses provide strong evidence that new mothers'—but not new fathers'—employment is constrained by occupational work hour inflexibility.

Figure 3 summarizes differences between mothers' and fathers' post-birth employment based on pre-birth occupational work hour inflexibility, showing predicted probabilities of currently working. Prior to a birth, there is a relatively small gap in the probability of working for women and men who were working at some point in the two years prior to the birth. Because men's employment is not affected by either parenthood or its interaction with measures of work hour inflexibility, their employment remains high following a birth regardless of their level of pre-birth occupational inflexibility. Women's post-birth employment, however, depends on pre-birth occupational inflexibility. Among women in flexible occupations, which we operationalize as those that are one standard deviation below the mean in the share of 40-or-more hour workers (0.61) and one standard deviation below the mean in the work hour wage premium (0.66), an estimated 78.6 percent of women are working post-birth. In contrast, among women in inflexible occupations, which we define as those that are one standard deviation above the mean in the share of 40-or-more hour per week workers (0.95) and one standard deviation above the mean in the work hour wage premium (1.07), only 68.0 percent of women are working post-birth.

Our analyses of childless women provide further support for the predictions of our theoretical model, in particular isolating the effect of work hour inflexibility on mothers' employment rather than more general employment declines associated with occupational inflexibility that affect all women regardless of family demands. Consistent with our hypotheses, for childless women with a "placebo" birth, we find that interactions between pre-placebo birth occupational work hour inflexibility and placebo motherhood are small in magnitude and not statistically significant (Table 2, column 3). Similarly, for the subset of women observed at least three years prior to a first birth, the same null findings hold (Table 2, column 4). Occupational work hour inflexibility 3 to 4 years prior to a first birth does not predict women's employment prior to pregnancy. Our approach provides critical analytic leverage in isolating how work hour inflexibility at the occupation level combines with the demands of motherhood to shape women's employment trajectories.

Measurement of Occupational Work Hour Inflexibility

We empirically test various occupational work hour prevalence thresholds and alternative measures of work hour inflexibility. First, we consider the appropriateness of our 40-hour-or-more threshold for assessing work hour inflexibility. We examine work hour prevalence thresholds at or below 20, 25, 30, and 35 hours, and at or above 40, 45, 50, 55, and 60 hours. Figure 4 (see also Appendix Table A3, panel 1) shows consistent, statistically significant relationships between the prevalence of work hours below 40 hours in an occupation and

new mothers' employment, but no statistically significant associations above that threshold. In occupations with a high share working below 40 hours, post-birth employment is higher; in occupations with a high share working 40 hours or more, post-birth employment is lower; and in occupations with a high share working more than 45 hours, there is no statistically significant relationship with post-birth employment. We view this as an important and novel finding because it suggests that the relevant margin for decisions around new mothers' employment – in a period in which caregiving demands are particularly intense – is not cutting back from overwork to full-time hours, but cutting back from full-time hours to something less than 40 hours per week. Comparing measures based on different segments of the work hour distribution (the 25^{th}, 50^{th}, and 75^{th} percentile of work hours in an occupation) leads to similar conclusions. We find that the bottom and middle portion of the work hour distribution is more relevant to new mothers' employment than the top of the work hour distribution (Appendix Table A3, panel 2).

Second, we explore the possibility that occupations with more variation in weekly work hours would apply less normative pressure on individuals with respect to work hours. We consider variation in work hours as a predictor of occupational work hour inflexibility, and we find no statistically significant association between the standard deviation of weekly work hours in an occupation and mothers' employment, net of average weekly hours in an occupation (Appendix Table A3, panel 3). Adding the standard deviation of weekly work hours to our final models also did not change our estimates of the associations between the share of 40-hour-or-more workers and wage premiums to longer hours with mothers' employment.

Third, we consider whether it is more appropriate to rely on only men's work patterns to generate our key occupational measures, based on the idea that men's behavior may set the normative expectations for all workers at the occupational level. The fourth panel of Table A3 shows results of our main model, but with occupational measures derived from the distribution of male workers only (vs. all workers). Results are consistent with our key findings, suggesting that the work hours of male workers in an occupation are not uniquely important in shaping new mothers' employment.

Finally, we follow Cha's (2013) research that treats percent male in an occupation as an indicator of work hour norms, and we examine the possibility that occupational gender composition confounds the relationship between our measures of work hour inflexibility and new mothers' employment. The fifth panel of Table A3 shows results of our main model, but with the addition of percent female at the occupation level interacted with parenthood. The interaction of percent female by parenthood is not statistically significant, and it does not change our key results. Net of our more direct measures of work hour inflexibility, we find no evidence that the percent male in an occupation shapes maternal employment.

Additional Robustness Checks

Accounting for time following birth.—We tested the sensitivity of our results to our treatment of time since birth. We replace our dichotomous parental status measure with indicators for years one, two, and three following birth, which we interact with our measures of occupational work hour inflexibility. Modeling associations between pre-birth

occupational inflexibility by years relative to birth allows us to assess whether the effects fade, remain stable, or increase over time and provide leverage in evaluating whether the estimated effects are plausibly due to variation across occupations in access to parental leave that may be correlated with work hour flexibility.[3] If occupational differences in access to parental leave are driving the associations between work hour inflexibility and employment, we would expect to see the effects disappear after a few months and therefore to only observe an association between occupational work hour inflexibility and employment during the first year following a birth.

Consistent with analyses using our dichotomous measure of parental status, results in Appendix Table A4 show that the share of 40-or-more hours per week workers and the wage returns to longer hours in women's pre-birth occupations are both negatively associated with employment in each year following the birth. Interactions between our indicators of years post-birth and the share of 40-or-more hour workers are jointly significant at the $p < 0.05$ level, as are interactions between years post-birth and wage returns to longer work hours. Moreover, given that the point estimates for both indicators of occupational work hour inflexibility are larger in years 2 and 3 relative to year 1, these analyses provide no evidence that the effects of occupational work hour inflexibility fade out over time or are driven by differences in access to parental leave.

Measuring and modeling employment.—We examine the robustness of our findings to various approaches to measuring and modeling employment following birth (see results in Appendix Table A5). In the first column, we find that results from models of labor force participation (employed or seeking work) are substantively identical to our employment measure. In the second column, we demonstrate that results are robust to the exclusion of self-employed workers. In the third and forth columns, we present results from multinomial logistic regression models with part-time employment, full-time employment, and not working as outcomes. These results are consistent with our employment and labor force participation outcomes. Finally, columns 4 and 5 show that findings are robust using both random and fixed effects logit models.

Additional potential confounders.—Finally, we estimate supplemental models with several time-invariant conventional individual predictors of maternal employment interacted with motherhood status. These pre-birth measures include hourly wage, educational attainment, age at birth, race and ethnicity, whether worked full-time, job tenure, and indicators of partnership status and partner work hours. We prefer our more parsimonious specification, and analyses in Appendix Table A6 demonstrate the same strong and statistically significant negative association between occupational work hour inflexibility and mothers' – but not fathers' – employment.

[3]The SIPP employment measure captures whether an individual had a job but was absent from work for one or more weeks in a month for reasons other than a layoff, but does do not enable us to directly measure parental leave.

Discussion and Conclusion

Despite the importance of parenthood-related work interruptions in accounting for the gender wage gap and evidence of considerable occupational variation in work hour inflexibility, relatively little research has assessed how structural features of the labor market impact mothers' employment. This study extends scholarship on gendered work and family processes by integrating insights from studies of work hour inflexibility at the individual level with research on the social organization and compensation of work hours at the occupation level. Our innovative approach considers mothers' employment decisions as embedded in occupational contexts that provide varying degrees of flexibility in managing the competing demands of motherhood and employment. Using individual-level panel data merged to characteristics of occupations, we estimated the effect of two indicators of occupational work hour inflexibility on new mothers' employment. We also ran parallel models with theoretically-relevant comparison groups to identify the conditions under which occupational inflexibility constrains employment. Our study is the first to use recent, nationally representative data to estimate the gendered consequences of occupational inflexibility on new parents' employment decisions.

We theorized that intensive caregiving demands and the gendered cultural context of parenthood would interact with work hour inflexibility to constrain new mothers'—but not new fathers'—employment. We further hypothesized that inflexibility would have no effect on childless women's employment. Our findings provide consistent support for these hypotheses: women working in pre-birth occupations with a higher prevalence of 40-or-more hour work weeks and a higher wage premium to longer work hours were significantly less likely to be working post-birth than women in occupations in which 40-or-more hour work weeks were less common and work hour wage premiums smaller. Comparisons with new fathers, "placebo" births among childless women, and pre-trends prior to pregnancy among women who subsequently had a first birth demonstrated that the effects of work hour inflexibility on employment are limited to mothers. Although media accounts often highlight mothers' preferences as determinants of decisions to "opt out" of employment (Kupenberg and Stone 2008), our results are more consistent with qualitative studies showing that many mothers are pushed out of the labor force by inflexible jobs that fail to provide meaningful and economically viable reduced work hour options (Stone 2007). Our findings contribute to a growing body of research on work hour inflexibility and gender inequality in the labor market.

Our analysis nonetheless has important limitations. Despite the methodological strengths of our approach, causality is difficult to establish without random assignment. Few studies have used experimental designs to estimate the causal effects of workplace flexibility on worker outcomes (for exceptions, see Kelly et al. 2014; Moen et al. 2016). Future research could further attempt to isolate the causal effects of workplace inflexibility by implementing group-randomized interventions that allow workers to reduce their hours following a birth and eliminate wage penalties to reduced hours. Studies could also leverage policy changes in European countries that provide full-time workers with the right to shift to part-time hours and eliminate wage penalties to reduced hour employment.

Although the period surrounding the transition to parenthood is particularly important for understanding gender inequality in the labor market, a limitation of our analysis derives from the relatively short window of observation in the SIPP. We find persistence in the estimated effects of work hour inflexibility through the third year post-birth, suggesting that remaining in the labor force may be difficult in occupations that have few opportunities for reduced hours and that disproportionately penalize shorter hours, or that shifting into more flexible occupations is difficult. Research focusing on highly-educated women shows that the consequences of workplace inflexibility on employment persist over longer durations (Herr and Wolfram 2012; Stone 2007). Further, we know that employment breaks are associated with significant long-term wage penalties (Blau and Kahn 2017; Bertrand et al. 2010; England et al. 2016) and that employers discriminate against workers with caregiving-related employment gaps (Weisshaar 2018). Evidence thus points to barriers to mothers' labor market reentry that may persist or even increase over time. The use of nationally representative data to evaluate the potential long-term consequences of occupational work hour inflexibility is an important area for future research.

Scholars have theorized that despite gender egalitarian ideals for sharing parenting and paid work, workplace inflexibility and a lack of policy supports for combining work and family continue to push men and women towards more traditional patterns of gender specialization at work and at home (Gerson 2010; Pedulla and Thébaud 2015). Our finding that only women's post-birth employment is responsive to work hour inflexibility is broadly consistent with this perspective on the stalled gender revolution. It supports the notion that male breadwinner norms prescribing full-time employment continue to constrain fathers' options for combining work and family. The cultural imperative for men to provide financially (Killewald 2016; Sayer et al. 2011; Townsend 2002), men's lesser involvement in caring for children (Musick et al. 2016; Raley et al. 2012), and the lower social acceptability of part-time work for men (Pedulla 2016) presumably result in less demand for reduced work hours among fathers relative to mothers. In this context, occupational work hour inflexibility may have little bearing on fathers' employment decisions because men feel compelled to work longer hours despite many experiencing work-family conflict and feeling they spend too little time with children (Parker and Wang 2013).

Our research provides further evidence that longer hours and greater rewards for working longer hours contribute to gender inequality in the labor market (Cha and Weeden 2014; Cortés and Pan 2019; Gornick and Myers 2003). Because the occupational prevalence of 40-or-more hour work weeks and the wage returns to longer hours have gendered consequences, work hour inflexibility increases the employment gap between mothers and fathers. Work hour inflexibility may also contribute to occupational gender segregation, with women disproportionately leaving employment in occupations in which longer hours are more normative and longer work hours are more highly rewarded. Finally, workplace inflexibility may have implications for work-family conflict and other aspects of individual wellbeing among those who remain employed but are unable to reduce their hours. Employed mothers experience a significantly higher total workload than employed fathers at the transition to parenthood (Yavorsky et al. 2015). They have also maintained high levels of time with children by cutting back on time in leisure, sleep, and personal care (Bianchi 2000).

Results from this study raise important questions for future research on work-family policy, the organization of work, and potential tradeoffs between labor force participation and career attainment. Weak work hour regulations and labor market institutions in the U.S. strongly limit workers' ability to reduce their hours (Berg et al. 2004; Lyness et al. 2012; Kalleberg 2011). In contrast, many European countries have adopted policies to enhance work hour flexibility and facilitate the combination of work and family roles, such as the right to reduce hours to part-time and proportional pay for part-time work (Blau and Kahn 2013; Gornick and Meyers 2003; Hegewisch and Gornick 2008). Whereas our findings suggest that such policies could increase mothers' employment, prior studies have also raised important questions about the extent to which such policies simultaneously limit wages and placement in high-level positions (Blau and Kahn 2013; Connolly and Gregory 2010; Glass 2004; Mandel and Semyonov 2005; Pettit and Hook 2009). For example, wage returns to experience are generally lower in part-time versus full-time jobs (Connolly and Gregory 2010; England et al. 2016; Waldfogel 1997). Goldin (2014) suggests that the reorganization of work could potentially limit these types of tradeoffs, providing an example of how technological and organizational changes at the occupation level that make workers more effective substitutes for one another can result in small wage penalties to reduced hours and facilitate part-time employment opportunities. Understanding the extent to which work hour flexibility results in tradeoffs between mothers' employment and labor market attainment represents a critical question for future research.

New parents are making decisions in a labor market and policy context that provides highly constrained choices. Yet studies of specific occupations over time and in cross-national perspective demonstrate that work hour inflexibility is not inevitable or inherent to any particular type of work. Technological and organizational changes have increased work hour flexibility in pharmacy (Goldin 2014), and software engineers' work hours are organized in fundamentally different ways in India, China, and Hungary (Perlow 2001). "All-or-nothing" occupations with few opportunities to work a reduced work hour schedule and steep penalties to reduced work hours limit mothers' choices to quitting or working longer hours (Clarkberg and Moen 2001; Goldin 2014). The 40-or-more hour work week is typical of most occupations in the U.S. and nearly all occupations impose wage penalties for reduced hours. Work thus continues to be organized primarily around "ideal worker" norms that assume a full-time worker unencumbered by family responsibilities (Acker 1990; Blair-Loy 2003; Kelly et al. 2010; Williams 2000). This study provides evidence that this model limits women's employment following parenthood and suggests that moving toward a dual-earner dual-caregiver model is likely to require substantial changes in both gendered cultural norms of breadwinning and caregiving and the reorganization of work to support temporal flexibility.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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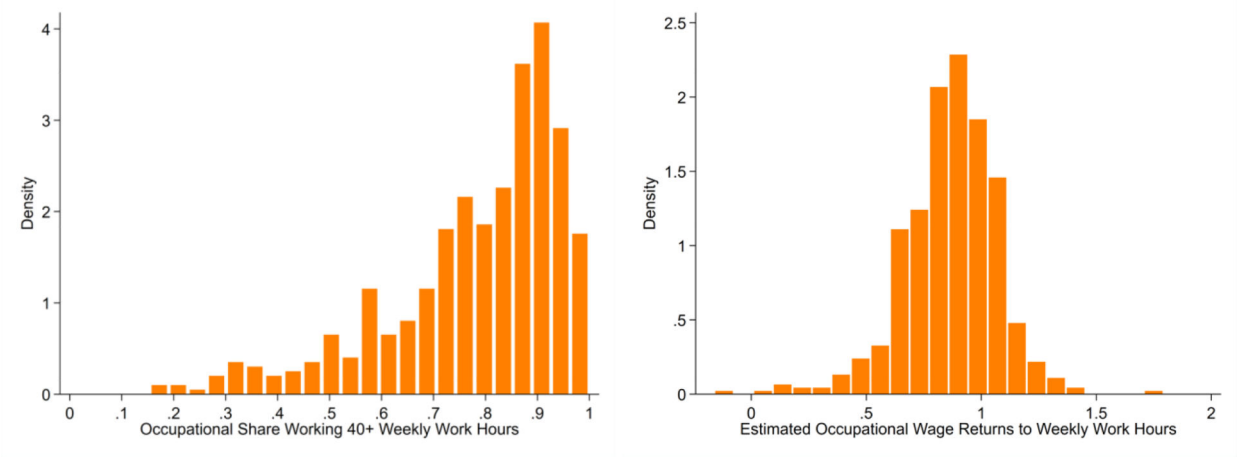

Figures 1A and 1B:

Occupational Share Working 40+ Weekly Work Hours and Estimated Occupational Wage Returns to Weekly Work Hours

Source: 2004–2013 American Community Survey.

Figure 2:
Proportion of Women and Men Working before and after a First Birth, Conditional on Working Prior to Birth, 2004 and 2008 SIPP
Source: SIPP 2004 and 2008 panels.

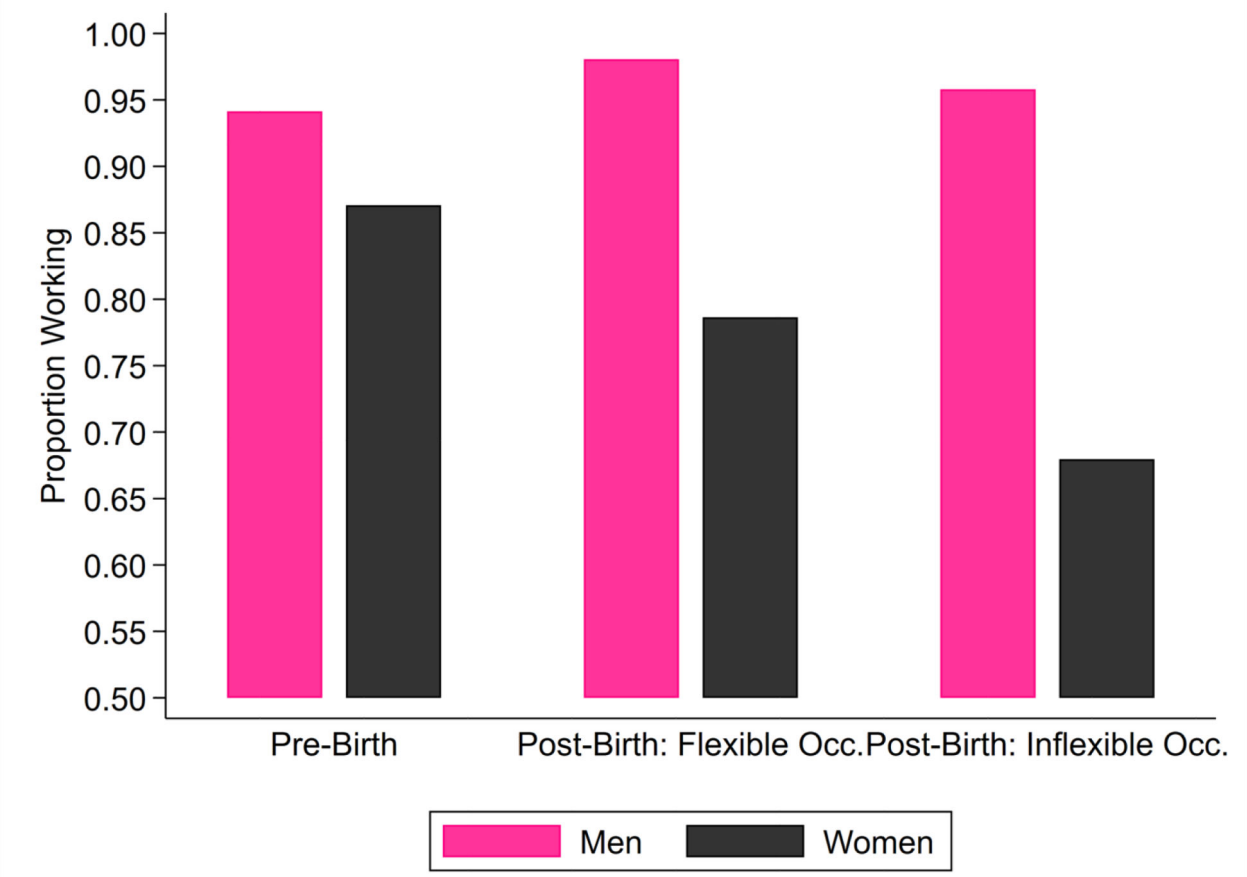

Figure 3:

Predicted Proportion of Men and Women Working Pre- and Post-Birth by Occupation Share 40+ Weekly Work Hour Workers and Wage Returns to Weekly Work Hours

Notes: Predictions from fixed effects linear probability models (shown in Table 2). Flexible occupations are defined as one standard deviation below the occupation mean in the share of 40+ weekly work hour workers (0.61), and one standard deviation below the work hours wage premium occupation mean (0.67). Inflexible occupations are defined as one standard deviation above the mean in the share of 40+ weekly work hour workers (0.95), and one standard deviation above the work hours wage premium mean (1.07).

Source: SIPP 2004 and 2008 panels.

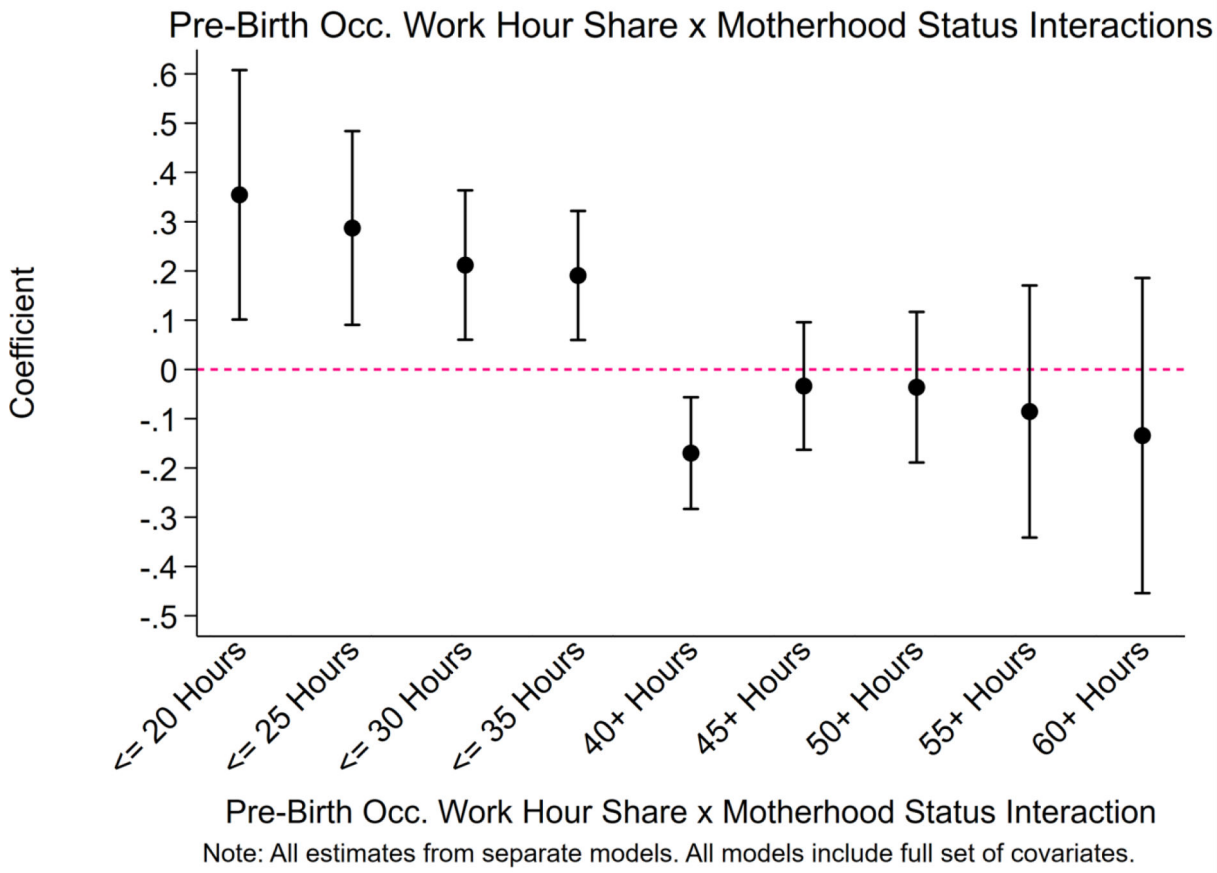

Figure 4:

Plotted Interactions between Motherhood Status and Pre-Birth Occupational Prevalence of Alternative Work Hours Thresholds

Source: SIPP 2004 and 2008 panels.

Table 1:

Descriptive Statistics for Women's and Men's First Pre-Birth Work Observation

	Women		Men	
	Mean	**SD**	**Mean**	**SD**
Pre-Birth Occupational Inflexibility				
Share 40+ Weekly Work Hours	0.643	0.203	0.813	0.143
Weekly Work Hour Wage Premium	0.922	0.137	0.875	0.173
Pre-Birth Occupational Controls				
Years of Education	13.9	2.2	13.9	2.2
Log Hourly Wage	2.77	0.45	2.95	0.40
Share Unemployed	0.056	0.034	0.059	0.035
Individual and Household Characteristics				
Other Household Monthly Income	3,861	3,834	2,590	2,443
Age	26.5	5.8	31.8	8.0
Currently Enrolled in School	0.159		0.082	
Region				
West	0.216		0.228	
Midwest	0.273		0.286	
Northeast	0.168		0.166	
South	0.343		0.321	
Partnership Status and Partner Employment				
Unpartnered	0.381		0.174	
Not Employed	0.027		0.049	
Partner Works Part-Time	0.035		0.136	
Partner Works Full-Time	0.401		0.547	
Partner Overworks	0.157		0.095	
Marital Status				
Married	0.548		0.728	
N	2,239		1,667	

Notes: Sample of women and men working prior to a first birth. Descriptive statistics are unweighted.

Source: SIPP 2004 and 2008 panels.

Table 2:

Regressions of Parental Status and Pre-Birth Occupational Work Hour Inflexibility on Employment, Fixed Effects Linear Probability Models

	(1) Mothers	(2) Fathers	(3) Childless Women: Placebo	(4) Mothers: Pre-Pregnancy
Parental Status				
Parent	−0.018 (0.10)	0.049 (0.06)	−0.014 (0.04)	0.072 (0.12)
Occupational Work Hour Inflexibility × Parental Status				
Share 40+ Weekly Work Hours × Parent	−0.170 (0.06) **	−0.050 (0.05)	0.025 (0.02)	−0.056 (0.08)
Weekly Work Hour Wage Premium × Parent	−0.123 (0.05) *	−0.013 (0.02)	−0.023 (0.02)	0.030 (0.06)
Number of Individuals	2,239	1,667	16,915	813
Person-Month Observations	77,912	54,281	439,449	18,268

Notes:

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$ (two-tailed tests).

Robust standard errors in parentheses. All models include individual fixed effects and control for occupation mean years of education, occupation mean log hourly wages, occupation mean unemployment, calendar year fixed effects, logged income of other household members, age, school enrollment, region, partnership status and partner employment (unpartnered, partner not employed, partner works part-time, partner works full-time, and partner overworks), and marital status. Models 1 and 2 also control for higher order births. Models 4 uses years 3 and 4 pre-birth as the reference period and year 2 pre-birth as the placebo indicator of parenthood.

Source: SIPP 2004 and 2008 panels.