

The Wages and Work Patterns of Women Who Breastfeed Their Children

Vida Maralani and Sam Stabler
Yale Sociology
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The intersection of gender, family, and work has been an area of long-standing interest in the fields of social stratification, economics, and demography. This area of research has been particularly important in light of American women's widespread participation in the labor force, and the large increase in the proportion of mothers who remain in the labor force after the birth of a child. The literature on the work patterns and wages of mothers has several facets. Some studies have considered the wage penalty that mothers face relative to women with no children or men with children (Waldfogel 1998; Budig and England 2001; Budig and Hodges 2010). Others have considered how long women take off from work after birth, and how labor force participation changes over a woman's sequence of births (Berger and Waldfogel 2004; Troske and Voicu 2010;). A related set of studies describes the dramatic rise in paid and unpaid leave in the months immediately following a birth. One of the lessons of this latter line of research is that temporary leaves are the primary way that women balance staying in the labor force and having children (Klerman and Leibowitz 1994).

In a recent article, Rippeyoung and Noonan (2012, hereafter R&N) contribute to this literature by assessing the role that breastfeeding plays in women's future earnings. Focusing on one specific dimension of motherhood, R&N argue that breastfeeding is a mechanism that leads women to have a lower economic position. R&N divide new mothers into three groups: those who are exclusive formula feeders, those who breastfeed their newborns at all in the first six months of life, and those who breastfeed their infants for 6 months or longer. R&N then examine the pre and post-birth earnings of mothers in these three groups using growth-curve models that estimate the earnings trajectories of women from the year before birth to at least one year after the birth. Their measure of earnings is the annual earnings of all mothers, including those who are not working (these women are assigned zero earnings). Using this measure, R&N find that women who breastfeed experience a reduction in their post-birth annual earnings. This reduction in earnings is explained by the fact that mothers who breastfeed work, on average, fewer weeks in the year after birth than mothers who are exclusive formula feeders.

In the current study, we revisit the question of how the earnings of women who breastfeed might differ from the earnings of those who do not breastfeed their children. The decision to breastfeed is extremely difficult to disentangle from women's broader preferences about work, child investment, and the work/family balance. Breastfeeding is just one of numerous changes, constraints, and choices that come with having a new child. The few months after birth when women breastfeed are a very small part of the many years that women might spend working in the labor force as mothers. In order to understand the role that breastfeeding plays in the working lives of women, our analyses link this question back to the larger literature on work and motherhood to which this empirical question relates.

Our analyses start by assessing the selectivity of women's work choices by breastfeeding status. Women's labor force participation is usually characterized as a two step process. The first step is selection into any work and the second step is differences in wages earned, conditional on working. In the existing literature, this selectivity is addressed in different ways. Some studies model the decision to work and the wage earned as joint processes. Others focus only on working mothers and use a research design, such as fixed effects models, that controls for the unobservables that lurk behind the decision to work and the wages earned. The R&N design, however, conflates these two processes by combining differences in hours, that is, the decision to work, with differences in earnings. Their analyses set the earnings of those who exit the labor force after giving birth to zero, and then average these zeros in with the earnings of those who stay in the labor force. We instead analyze these two processes as separate steps. We describe differences in how much time women take off from work by breastfeeding status and address the joint selection of work and wages using a Heckman selection model. We also use a propensity score approach to assess the effect of breastfeeding on wages and work patterns.

The question of selectivity is particularly vexing in the case of breastfeeding and labor market outcomes because breastfeeding itself is a behavior that is subject to considerable selectivity along social dimensions. Although 71% of children born in the U.S. in 2001 were ever breastfed, only about half of new mothers are still breastfeeding at all at 3 months and only about one-third are still breastfeeding their infants at 6 months (Li et al. 2002). Breastfeeding exclusively is even more uncommon, with about 40% of new mothers nursing exclusively at 3 months and only 13% still nursing exclusively at 6 months (Li et al. 2002). Women who breastfeed their children are positively selected with regards to many socioeconomic characteristics. They are more likely to be highly educated, married, bear children at older ages,

and have spouses who are high earners (Li et al 2005; Callen and Pinelli 2004). This type of social selectivity into breastfeeding makes it even more difficult to assess the relationship between this behavior and women's earnings. To gain traction on these issues, we describe differences in women's labor market outcomes (wages, weeks worked, annual earnings) by breastfeeding group separately for those who stay in the labor force versus those who take time off or leave after giving birth. We also estimate models that address issues of selectivity in our multivariate analyses.

We address the following research questions: do women who breast feed their children have different work patterns including leaves from work than women who do not breastfeed at all (exclusive formula feeders)? Conditional on working within one year after giving birth, what is the difference in the wages that women earn by breastfeeding status over both the short term and long term? Is there any evidence that breastfeeding has an effect on the earnings of women in subsequent years? How should we evaluate the short-term differences observed in women's wages and hours worked by breastfeeding status? Are these unintentional costs, as R&N suggest, or differential preferences and choices in the work/family balance?

Our analyses use the National Longitudinal Survey of Youth 1979 (NLSY), a nationally representative sample of respondents ages 14 to 22 when first surveyed in 1979. The NLSY contains detailed information on education, wages, income, fertility, marriage, and spouses' characteristics. The data also include detailed questions on breastfeeding practices. These data are among the best suited to answer questions about the intersection of work and fertility, especially as these relate to breastfeeding.

Table 1 shows some stylized facts. The results shown are weighted to adjust for the survey's complex design. We show differences in socioeconomic characteristics by breastfeeding status using the same breastfeeding categories as the R&N study. First, consistent with national trends, few women nurse their children for 6 months or longer. Only 15% of sample women fall in this category. Not surprisingly, those who do breastfeed are systematically advantaged on nearly every dimension of socioeconomic status. They have, on average, more schooling and much higher cognitive test scores (AFQT). They are more likely to work in managerial jobs and in the professional sector. They are far more likely to be married at the time their first child is born. They report feeling more internal self control rather than feeling that external forces shape their opportunities and outcomes (Rotter scale). They also have a significantly higher self-esteem score. Women who breastfeed have more years of total work

experience both in the year before giving birth, and the years that follow. If married, they have spouses' who earn considerably more per year than the spouses of women who formula feed. And despite the reductions in their own work hours, they have substantially higher family incomes both before and after they give birth.

The bottom panel of the Table 1 shows women's work characteristics by their breastfeeding status. Women who breastfeed have significantly lower rates of not working before their first birth. Women who breastfeed between zero and 6 months are more likely to work than formula feeders. These women also work more weeks per year (given that they work at all). Women who breastfeed earn higher hourly wages than exclusive formula feeders, and women who breastfeed less than 6 months have, on average, higher annual earnings than women in the other two groups. In results not shown here, we also find that women who go on to breastfeed were less likely to have traditional gender roles regarding work and motherhood than formula feeders (measured in 1979 before sample women gave birth). Overall, these patterns suggest that the relationship between breastfeeding and work is more nuanced and complicated than suggested by previous research. These stylized facts serve as the starting point for our multivariate analyses.

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Table 1. Personal, Family and Work Characteristics by Breastfeeding Status, NLSY(N=1700)

	Formula only	Breastfeed <6 months	Breastfeed 6+ months	Notes
Personal and Family Characteristics				
highest grade completed at first birth	12.4	13.1 ^c	14 ^{ab}	
has college degree	.10	.19 ^c	.37 ^{ab}	
AFQT (cognitive test score)	36.6	51.3 ^c	59.7 ^{ab}	
% occupation = managers	0.17	0.28 ^c	0.48 ^{ab}	
% industry = professional	0.22	0.26	0.4 ^{ab}	
age at first birth	23.2	24.7 ^c	24.7 ^a	
married at birth	0.72	0.87 ^c	0.94 ^{ab}	
Rotter (lower # = more internal control)	9	8.4 ^c	7.9 ^a	b=.06
Self esteem (higher # = more esteem)	21.8	22.9 ^c	22.7 ^a	
years work experience year before birth	3.8	5.3 ^c	5.2 ^a	
years work experience year of birth	4.5	6.0 ^c	5.9 ^a	
years work experience year after birth	5.1	6.7 ^c	6.4 ^a	
spouse earnings year before birth (\$)	29462	35669 ^c	42309 ^a	b=.058
spouse earnings year of birth (\$)	28700	36193 ^c	44807 ^a	
spouse earnings year after birth (\$)	31241	40791 ^c	46583 ^a	
total family income year before birth	42887	58994 ^c	76152	a=.06
total family income year of birth	39420	50743 ^c	60917 ^a	
total family income year after birth	44749	59396 ^c	68065	
Work Characteristics				
% work zero weeks year before birth	14.2	7.6 ^c	10.3	
% work zero weeks year of birth	25.9	19.6 ^c	19.6	
% work zero weeks year after birth	25.4	23.8	24.3	
weeks worked year before birth	35.4	40.8 ^c	40.5 ^a	
weeks worked year of birth	25.7	29.5 ^c	24.6 ^b	
weeks worked year after birth	28.8	31.4	26.3 ^b	c=.056
weeks worked wks>0, yr before birth	42	44 ^c	45 ^a	
weeks worked wks>0, year of birth	35	37	31 ^{ab}	c=.07
weeks worked wks>0, year after birth	38	41 ^c	35 ^b	a=0.07
hourly wage worked, year before birth	9.1	10.5	11.6 ^{ab}	c=.053
hourly wage worked, year of birth	9.4	11.0 ^c	12.0 ^a	
hourly wage worked, year after birth	9.4	12 ^c	13 ^a	
annual earnings year before to birth	13171	18462 ^c	19638 ^a	
annual earnings year of birth	10587	14566 ^c	12496	
annual earnings year after birth	11064	14524 ^c	11453 ^b	
N	838	609	253	
% in sample	0.49	0.36	0.15	

Notes: a= breastfed 6+ months vs. formula significant at p<.05; b=breastfed 6+ months vs. breastfed 0-6 months significant at p<.05; c=breastfed 0-6 months vs. formula significant at p<.05. Estimates shown use the 1979 probability weights to adjust for the survey's complex design. All dollars are adjusted to real values in 2000. The Rotter and self-esteem scales were measured in 1979, before any sample women had their first births.