DISENTANGLING MATERNAL DECISIONS CONCERNING BREASTFEEDING AND PAID EMPLOYMENT

Bidisha Mandal, Washington State University
Brian E. Roe, Ohio State University
Sara B. Fein, Food & Drug Administration

Nov. 8, 2010
Bidisha Mandal

“No relationships to disclose”
Motivation

- Importance of breastfeeding in developed countries is increasingly emphasized
- National U.S. health objectives call for exclusive breastfeeding for at least 6 months and breastfeeding duration for at least 12 months
- More U.S. mothers of infants are participating in the workforce
- More mothers of infants are combining market work and breastfeeding
- Postpartum return to work is associated with lower rates of initiation and shorter duration of breastfeeding in the U.S.
- Conflict between economic incentives from labor market and health benefits (to both mother and child) from breastfeeding
Objective

- Opportunity cost of breastfeeding
  - Breastfeeding is time-consuming
  - It is in direct competition with other uses of a woman’s time, including market work

- Most studies find a negative relationship between probability of breastfeeding and postpartum return to work
  - However, most studies use single equation estimation method
  - Most studies assume employment is exogenous to infant feeding practices
  - Data limitations

- We use simultaneous equations method to study
  - The decision process regarding work leave and breastfeeding durations
  - The decision process regarding work effort and breastfeeding intensity
Infant Feeding Practices Study II

- Conducted by the FDA in collaboration with the CDC from May 2005 to June 2007

- Longitudinal study of women from late pregnancy through their infant’s first year of life - 12 surveys (primarily mail)
  - 1 prenatal questionnaire
  - 1 telephone interview near the time of the infant’s birth
  - 1 neonatal questionnaire at infant age 1 month
  - 9 questionnaires sent about every 4 weeks during infant ages 2 to 7 months and then approximately every 7 weeks until infant age 12 months

- 3033 qualified women completed the neonatal questionnaire and were enrolled in this study
Data Limitations

- Sample is probably not reflective of the average characteristics of the U.S. population
  - Higher average education
  - Higher income

- Return to same employer
  - Not known
Sample

- Not enough information if due date was more than 3 months away or did not complete neonatal questionnaire
  - 16 cases deleted (3017 remaining)

- Conditioning on pre-birth market work
  - 1506 cases deleted (1511 remaining) if no prenatal work activity
  - Prenatal work = working for pay at any time from the 3 months before pregnancy until last trimester; does not have to be full-time worker

- 468 women did not initiate breastfeeding and/or worked pre-birth but did not intend to return to work - Excluded
  - 1049 remaining
  - Have full information (on all variables of interest) for only
    - $N = 743$ women for duration models
    - $N = 649$ women for month 3 intensity model
    - $N = 586$ women for month 6 intensity model
Selection Bias?

- Breastfeeding initiation and work leave duration
  - Work leave duration is shorter for those who do not initiate (11.3 wks vs. 13.5 wks)
- Intention to return to work and breastfeeding duration
  - Breastfeeding duration is shorter for those who return to work (25.3 wks vs. 31.4 wks)
- But, we do not find any selection bias
Models

- Breastfeeding and work leave durations
  - Duration of any breastfeeding (27.3 wks)
  - Duration of exclusive breastfeeding (7.8 wks)
  - Duration away from work (13.5 wks)

- Breastfeeding intensity and work effort at months 3
  - Number of breastfeedings at infant age 3 months (4.7/day)
  - Number of breastfeedings at infant age 6 months (3.2/day)

- Breastfeeding intensity and work effort at months 6
  - Number of hours of market work at infant age 3 months (3.7 hrs/day)
  - Number of hours of market work at infant age 6 months (4.6 hrs/day)
Independent Variables and Method

- **Independent variables**
  - Background – age, education, race, marital status, residence
  - Parity – number of other children and experience with breastfeeding
  - Birth and breastfeeding – if mother was breastfed, embarrassment, childbirth complications, problem breastfeeding, attended breastfeeding class
  - Prenatal job characteristics – self-employed, part-time work, available work leave, supportive at work, satisfaction with work, contribution to family income, occupation type

- **Method - Bivariate Tobit**
  - Control for unobserved effects
  - Possibility of both activities continuing at the end of the surveys
  - Missing data due to drop outs
  - Observe intensity or effort only if participating in activity
Work Leave and Breastfeeding Durations

- Decision process is fully simultaneous
- Longer leave from work increases duration of breastfeeding
  - Every week of work leave increases breastfeeding duration by 2.6 weeks
- Duration of breastfeeding is not as significant determinant of work leave
  - Every week of breastfeeding increased work leave duration by only a fourth of a week
- Institutional constraints surrounding the decision to return to work are more inflexible
  - Many women opt for longer durations of breastfeeding by managing to prolong their leave from the labor market
- Significant covariates
  - > HS education, previous experience with breastfeeding, and self-employment status were positively related to duration of breastfeeding
  - Women with > HS education returned to work approximately a week sooner
  - Women with one other child who was breastfed returned to work approximately 2 weeks sooner
Work Leave and Exclusive Breastfeeding Durations

- Decision process is recursive rather than fully simultaneous
  - An extra week’s time away from market work increases the duration of exclusive breastfeeding by four-fifths of a week
  - Duration of exclusive breastfeeding is not a significant determinant of work leave
- Similar results regarding effect of education, previous breastfeeding experience and self-employment on work leave and breastfeeding as before
- In addition,
  - Women from western states of the U.S. were likely to exclusively breastfeed longer, while women from southern states were likely to exclusively breastfeed for a shorter duration
  - Embarrassment with breastfeeding and problems with breastfeeding inhibited the duration of exclusive breastfeeding
Work Effort and Breastfeeding Intensity

- Fully simultaneous processes (both months 3 and 6)
- Work effort constraints breastfeeding intensity
  - The number of daily breastfeedings (including expressed milk feedings) was significantly reduced as the number of daily work-hours increased
  - A woman working approximately 3 hrs/day when her child was 3 months old, for example, gave her infant about 1 less breast-milk feeding/day, on average, than a woman who was not working
  - Larger trade-off at infant age 6 months
- Number of daily breastfeedings also influenced the daily hours of work
  - 1 extra feeding/day reduced work effort by 1 hr/day in month 3, and by 0.5 hr/day in month 6
- Women with higher education, married women, women with multiple children who were breastfed, and women who were breastfed themselves when they were infants, reported higher breastfeeding intensity
Comparison with IFPS I Results

- **Average duration of**
  - Breastfeeding = 21.53 weeks
  - Work leave = 12.89 weeks

- **Intensity of**
  - Breastfeeding in month 3 = 3.33, in month 6 = 1.83 (number/day)
  - Work in month 3 = 21.81 h/week, in month 6 = 24.25 h/week

- **Recursive relationship between work and infant breastfeeding decisions (Roe et al., 1999)**
  - Work fully dominated the decision process
  - Decisions surrounding the duration of breastfeeding and the intensity of breastfeeding had no significant impact on the work decisions

- **Reasons for different results**
  - Maternity leave policies - the Family and Medical Leave Act
  - Other changes in the U.S. work place
  - Availability and efficacy of portable breast pumps
From a public health policy perspective...

- Work dominates the decision to exclusively breastfeed

- Self-employed women breastfeed and exclusively breastfeed longer, and more number of times till month 3

- Those who did not attend any breastfeeding class report lower number of feeds/day in month 3

- Breastfeeding (duration and frequency) is lower in the south

- Efforts aimed at achieving goals that involve extending the duration and intensity of breast feeding among U.S. women may also impact U.S. labor markets
  - For example, a policy that successfully improves the average mother’s comfort with the act of breastfeeding and increases her breastfeeding by 4 weeks would delay her re-entry to paid labor by 1 week and remove approximately 3.7 hours of paid labor per day from the labor market
  - Conversely, a policy that extends a newborn mother’s work leave by 1 week will extend her breastfeeding duration by more than 2.5 weeks