

Maternal Job Displacement and Child School Success

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Abstract

This paper examines the effects of involuntary job displacement on children's achievement in school to assess the importance of a major source of volatility in economic circumstances. I verify the negative effects of jobloss on children's achievement and show that the size of these effects depend on whether the job displacement was due to a layoff or a firing. I allow for differential jobloss effects by child age to account for children's changing susceptibility to household disruptions during their development. The paper proceeds to then account for three key dimensions that have not been previously addressed in studies of maternal job displacement. First, I consider the duration of jobloss effects over time by explicitly accounting for the duration of time since jobloss. This approach takes explicit account of the age sensitivity of children at different periods of development as well as the time elapsed since experiencing a jobloss. Second, I account for coresiding partners' labor force attachment. Third, I consider the differential effects of jobloss by a measure of family economic insecurity at the time of jobloss.

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1. Introduction

Growing socioeconomic gaps in achievement (Reardon 2011), high school graduation and college entrance (Duncan et al. 2013) and college completion (Bailey and Dynarski 2011) limit a primary pathway for economic advancement and likely play a large role in long-run trends in mobility. There is broad consensus that an important part of these widening inequalities may be attributed to the takeoff in income inequality since the late 1970s. While many attributes of family socioeconomic background maintain a close relationship with children's educational attainment, the mechanisms linking family income during childhood to educational attainment remain unclear. There is continued uncertainty over the size of the causal effect from family income on children's school success (Blau 1999; Violato et al 2011; Loken et al. 2011; Dahl and Lochner 2012). Family income may also reflect unobserved attributes of parents influencing their career success and marriage duration as well as the nature of their time investments in their children and other parenting behaviors.

Another difficulty in accounting for the importance of family income is that the level of family income is closely related to volatility in family economic circumstances over time. Individuals with tenuous labor force attachment, working for hourly wages or employed in sectors of the economy with highly variable demands for labor are more likely to both earn a lower annual income and face higher risks of a firing or layoff. While the greater risk-taking among higher income workers may result in far larger swings in their income over time, high income workers are also better positioned to insure against sizable changes in economic circumstances with individual assets or access to credit markets. Volatility in economic circumstances may matter above the effects of changes in economic circumstances on household expenditures which may influence child outcomes related to school success. Involuntary short-

run fluctuations in income entail many psychosocial consequences for parents which may have lasting effects on children. Moreover, many psychosocial consequences are far more sensitive to losses rather than gains, reflecting a commonplace psychological aversion to loss that far exceeds any psychological rewards from gains of equal size.

This paper examines the effects of involuntary job displacement on children's achievement in school to assess the importance of a major source of volatility in economic circumstances. A large literature examines the effects of a parent's jobloss on many measures of child development and school success (Ruhm 2008; Oreopoulos et al. 2008; Von Wachter et al. 2009; Kalil and Wightman 2011; Brand and Thomas 2014). I begin by verifying the negative effects of jobloss on children's achievement and show that the size of these effects depend on whether the job displacement was due to a layoff or a firing. I allow for differential jobloss effects by child age to account for children's changing susceptibility to household disruptions during their development. The paper proceeds to extend these findings to account for three key dimensions that have not been previously addressed in studies of maternal job displacement. First, I consider the duration of jobloss effects over time by explicitly accounting for the duration of time since jobloss. This approach takes explicit account of the age sensitivity of children at different periods of development as well as the time elapsed since experiencing a jobloss. Second, I account for coresiding partners' labor force attachment. The high rate of marriage among the mothers experiencing jobloss in my sample (56%) represents a sizable share of women's overall experience of jobloss.

The third main contribution is to account for the heterogeneous effects of job displacement by family economic circumstances. Recent evidence suggests that the magnitude of jobloss is greater among those least likely to experience a jobloss (Brand and Thomas 2014). Higher

average achievement among these children suggests that they then have more at stake with disruptions in household economic circumstances which matter for schooling. These children may then experience larger adverse effects, yet because of their relative economic advantage, they will be more likely to remain near the middle. By contrast, children facing socioeconomic disadvantage risk who already have higher likelihoods of performing below average, risk falling to low ranks of achievement that jeopardize their school progression and other important socioemotional outcomes.

2. Maternal Job Displacement and Child Development

To the extent that household income matters for school success, the immediate consequences of a jobloss for household income presents an important set of effects on children's achievement. Family income widely associated with aggregate measures of home environment attributes which promote healthy cognitive development such as the observed quality of parent-child interactions and level of available cognitive stimulation (Taylor et al. 2004).

However, the consequences of a jobloss extend far beyond what often may amount in a short-term reduction in household income. A growing literature documents the effects of experiencing a jobloss on an individual's psychosocial welfare. Many of these changes in parents' psychosocial welfare may be particularly important for children. Maternal stress may lead to reductions in the amount and quality of time spent with children. This may involve less time involved in school work (Frech and Kimbro 2011) or engaging in coping behaviors such as substance use with potentially adverse consequences for children. Parents who reported being stressed due to economic circumstances also were more likely to report feeling less effective in

disciplining their children as well as less affectionate in parent-child interactions (Mistry et al. 2002).

In addition to the many material changes in household circumstances following a parent's job loss, these changes can erode marital quality. Charles and Stephens (2004) found a higher risk of divorce following an individual layoff. They further found no change in the risk of divorce after a spousal disability with an effect on family income that is comparable to the effects of a layoff. These results are suggestive of the unique psychological consequences of a jobloss that influence marital quality. These correlates are consistent with evidence showing low income children are more likely to live with mothers who are depressed (Yeung et al. 2002; Berger et al. 2009).

These influences may be consequential for children's achievement in school by influencing their psychosocial welfare. Generalized anxiety and sadness are often associated with withdrawal from relationships with peers and teachers (Posner and Rothbart 2000) and disengagement from classroom activities (Fantuzzo et al 2003). Anti-social behaviors that may be disruptive to cooperative participation in classroom activities may also affect achievement. Often referred to as externalizing behaviors, anti-social behaviors are not limited to aggressiveness and willful deviance but also include poor self-regulation of negative impulses. Self-regulation in social relationships with teachers and peers is widely shown to be closely correlated with early achievement success (Mashburn and Pianta 2006; Raver et al. 2011). Duncan and Magnuson (2011) not only show large economic inequalities in such behaviors in the ECLS-K but that these behaviors are also highly predictive of high school drop-out.

3. Estimating Jobloss Effects

Unobserved attributes of children and families that are related to both mothers' labor supply and child achievement present a challenge to estimating jobloss effects on child achievement. Child attributes such as behavioral problems or learning difficulties that are not reflected in survey questions but which are observable to parents may pose an important influence on mothers' jobloss risk. For instance, mothers who devote greater attention to managing their children's activities or responding to problems may do so at the cost of curtailing their work hours, having more unplanned work absences and reducing their on-the-job effort. Any effect of these shifts in workplace performance on the risk for jobloss will then result in upward bias in estimated jobloss effects. Unobserved family attributes may similarly lead to upward bias in jobloss effects. Individual ability remains among the most widely attributed reasons for job discharges in employer surveys (Neumark Kahn Kletzer and Fairlie). To the extent that mothers' workplace relevant ability is heritable and aids their children's school success, it may account for an important share of the tie between maternal labor market success and child achievement. Work habits which may originate in similarly inherited personality traits or which are subject to learning over time present additional potentially important unobserved effects.

The consequences of inadequately adjusting for family attributes are well recognized in studies of child behavior and achievement. Common approaches include adding numerous controls for family background (e.g., Han et al. 2001; Ruhm 2004). When extensive measures of family background are available, as in the NLSY79, adding covariates for parents' education, family structure, family income and other family attributes may capture a considerable share of the main family effects influencing both parents' unemployment and child outcomes. For

instance, the availability of a cognitive test score for mothers in the early waves of the NSLY79 provides a measure that likely captures a larger part of the type of ability that influences both job performance and parenting than is captured by a single measure of completed education. For this reason, both measures have been included in past studies of family socioeconomic status and child achievement in the NLSY79 (e.g., Han et al. 2001; Ruhm 2003).

An alternative approach to including large numbers of covariates to capture observable attributes related to jobloss and achievement adds an additional control variable for a family-specific unobserved effect. Fixed effects models present a tractable method for controlling for unobserved family influences that have been widely used in studies of child development (Waldfogel et al. 2002; James-Burdumy 2005; Blau 1999; Waldfogel et al. 2002; Currie and Stabile 2006). With the availability of siblings, a fixed effect for unobserved family level influences can be included that controls for the influences on child achievement from time invariant factors which are common to both siblings.

4. Data

I analyze data drawn from the 1979 through 2010 waves of the National Longitudinal Survey of Youth (NLSY79) and National Longitudinal Survey's Child-Mother File (NLSCM). The NLSY79 is a nationally representative longitudinal survey originally including 12,686 civilians aged 14-22 years old in 1979. The original sample was approximately evenly distributed between males (n=6,403) and females (n=6,283) and included oversamples of Black and Hispanic and economically-disadvantaged respondents. Of the original respondents, mothers were interviewed annually until 1994 and biennially thereafter. Mothers' children were interviewed biennially beginning in 1986. The NLSCM includes mother's reports of many attributes of their children and direct assessments of mathematics and reading. The analysis is

limited to a merged mother-child dataset of working mothers who coresided with their children when their children were below age 18.

Job displacement is identified using respondents' weekly work histories reported over the preceding period since the last interview. Respondents report each job they have held and specify the reasons for any job transitions. In the event of a job displacement, respondents are asked to specify whether the cause of the displacement was due to a layoff, a plant closure or discharge. Table 1 reports working mothers' experience of all 3 types of jobloss by survey year. The third column shows that the percentage of working mothers who experienced a jobloss ranged from a high of 10.9% at an average age of 23.7 in 1985 to a low of 5.7% at an average age of 44.4 in 2008. Layoffs and plant closures represent more common causes of jobloss across all survey years. The high percentage of jobloss experience for 1985 likely reflects the greater susceptibility to jobloss among the subsample of NLSY women respondents who had already left school by this survey year.

These high rates of jobloss experience contribute to a high rate of lifetime maternal jobloss experience. Table 3 shows the distribution of women's lifetime experience of jobloss when they were mothers of children below the age of 18. The percentage of mothers who experienced one or more jobloss from all causes is high (42%), with layoffs and closures affecting 34.1% and discharges 15.4%. Layoffs and closure are the primary causes of jobloss across all survey years. Tables 2 and 4 report corresponding distributions for children's experience of maternal jobloss. The percentage of children who experienced a maternal jobloss ranged from a high of 11.5% at an average age of 4.9 in 1985 to a low of 6.2% at an average age of 12.7 in 2005- 2006. Over one-third of children experienced a mother's jobloss.

Measures of child achievement include test scores of children's verbal, mathematics, and reading achievement in assessments administered for the NLSY. The Peabody Individual Achievement Tests (PIAT) are administered to children 5 years of age and older and cover reading and mathematics. The PIAT-M measures a child's achievement in mathematics and consists of 84 multiple-choice questions of increasing difficulty. The easiest questions are at the beginning of the test measuring early skills such as number recognition and progresses to more difficult mathematic concepts including algebra, geometry and trigonometry. The PIAT-R measures word recognition and ability to read words aloud both of which are important components of reading achievement among children. It contains 84 items which increase in difficulty and skills assessed include matching letters, naming names and reading words aloud. A Peabody Picture Vocabulary Test (PPVT) is given to children as young as 3 years of age to assess vocabulary knowledge. The PPVT measures receptive vocabulary for Standard American English and verbal ability (Dunn and Dunn 1981), consisting of 175 items of increasing difficulty. All scores are standardized by single year age groups using a sample of students from the 1970s with a standard deviation of 15 and a mean of 100.

Table 5 reports mean values of the achievement measures by the age when the tests were administered. The reported test scores are recentered around zero with a standard deviation of one for ease of interpretation. Separate means are reported by jobloss experience prior to the end of the specified age. Children who experienced a jobloss have consistently lower scores at all ages. The largest difference occurs in PPVT scores at age 3. At this age, the mean PPVT scores of children who experienced jobloss were .322 of a single standard deviation lower than children who did not experience jobloss. The magnitude of difference steadily grows from .149 of a single standard deviation at age 4_6 to .298 of a single standard deviation for test takers at age

13-15. The largest differences across all age groups occur in math scores for the three younger age groups, ranging from .180 of a single standard deviation at age 4-6 to .273 of a single standard deviation at age 10-12. The difference of .248 of a single standard deviation at age 13-15 is only modestly smaller than the difference in PPVT scores at this age.

Table 6 reports descriptive statistics for key covariates from the analytic sample of children. Separate columns are reported for children who ever experienced a jobloss prior to age 18. There are sizable differences in the attributes of the children who experienced maternal jobloss. This subsample has higher shares of minority children and mothers who are younger and less educated. The average age at mothers' first birth is 21.4 years with an educational attainment level just above high school (12.8 years) for those who experienced jobloss. The average age at mother's first birth is 23.8 with an educational attainment level of college (13.5 years) for those who did not experience jobloss. Mothers with no jobloss had higher education levels and later first births.

5. Results

Table 7 reports results from fixed effects estimations for PPVT and PIAT-M measures of child achievement. All models include the full set of covariates. The models for PPVT verify jobloss effects for children's achievement at young ages.

Appendix

Table 1. Jobloss Incidence Among Working Mothers of Children < 18 (%)

Year	N	All Causes	Layoff, Closure	Discharge	Mean Age
1985	1,590	10.9	7.6	3.7	23.7
1986	1,835	9.7	6.8	3.2	24.3
1987	2,042	9.7	6.1	3.8	25.1
1988	2,290	7.4	5.3	2.4	26.6
1989	2,436	7.1	4.6	2.6	27.7
1990	2,581	7.7	5.2	2.6	28.5
1991	2,273	7.4	5.6	1.9	29.6
1992	2,376	6.9	4.5	2.5	30.6
1993	2,437	6.1	4.6	1.6	31.4
1994	2,451	6.2	4.3	2.2	32.5
1996	2,632	9.1	6.5	2.7	33.9
1998	2,733	7.2	5.1	2.2	35.9
2000	2,538	8.4	5.9	2.6	37.9
2002	2,284	9.5	7.8	1.9	39.3
2004	1,983	6.9	5.1	1.8	41.3
2006	1,704	5.8	4.4	1.6	43.3
2008	1,409	5.7	4.4	1.3	44.4
2010	1,055	8.4	7.3	1.1	46.6

Table 2. Maternal Jobloss Incidence Among Children < 18 years old (%)

Year	N	All Causes	Layoff, Closure	Discharge	Mean Age
1985	2,440	11.5	8.2	3.8	4.9
1986	2,940	10.3	7.1	3.4	5.1
1987	3,461	10.2	6.1	4.2	5.4
1988	4,088	8.2	5.8	2.8	6.2
1989	4,518	7.4	5.0	2.5	6.6
1990	4,914	7.6	5.1	2.8	7.8
1991	4,436	7.7	5.7	2.1	7.7
1992	4,775	7.1	4.8	2.5	8.3
1993	4,956	6.4	4.7	1.8	9.4
1994	4,959	6.5	4.4	2.4	10.0
1996	5,410	9.7	6.9	3.0	10.0
1998	5,491	7.6	5.4	2.3	11.1
2000	4,879	8.8	6.2	2.9	11.3
2002	4,160	9.5	7.8	2.0	11.9
2004	3,396	6.5	4.9	1.7	12.5
2006	2,772	6.2	4.7	1.8	12.7
2008	2,204	5.9	4.9	1.0	13.4
2010	1,547	8.3	7.3	1.0	13.6

Table 3. Mothers' Lifetime Incidence of Jobloss When Children < 18 years old (%)

Number of Jobloss	All Causes	Layoff Closure	Discharge
1 or more	42.0	34.1	15.4
1	24.1	22.5	11.0
2	9.7	6.9	2.8
3	4.6	3.0	1.0
4 or more	3.1	1.6	0.6

Table 4. Children's Lifetime Incidence of Jobloss When < 18 years old (%)

Number of Jobloss	All Causes	Layoff Closure	Discharge
1 or more	37.2	29.5	13.5
1	24.4	21.5	10.4
2	8.0	5.4	2.1
3	3.2	1.9	0.8
4 or more	1.6	0.6	0.2

Table 5. Differences in Mean Test Scores by Jobloss Experience

Test at Age	No Jobloss			Jobloss			Difference	SE
	N	Mean	SD	N	Mean	SD		
PPVT								
Age 3	1,067	0.040	0.999	152	-0.282	0.965	-0.322***	0.084
Age 4-6	3,521	0.024	1.007	672	-0.125	0.954	-0.149***	0.041
Age 7-9	1,733	0.049	0.995	647	-0.132	1.002	-0.181***	0.046
Age 10-12	3,782	0.075	1.002	1,676	-0.169	0.975	-0.244***	0.029
Age 13-15	432	0.103	1.044	227	-0.196	0.879	-0.298***	0.077
Math								
Age 4-6	3,981	0.034	1.004	943	-0.145	0.968	-0.180***	0.035
Age 7-9	4,616	0.048	0.994	1,445	-0.154	1.004	-0.202***	0.030
Age 10-12	4,165	0.084	0.997	1,850	-0.189	0.982	-0.273***	0.028
Age 13-15	2,608	0.091	1.004	1,496	-0.158	0.973	-0.248***	0.032
Reading								
Age 4-6	3,916	0.045	1.009	929	-0.190	0.937	-0.235***	0.035
Age 7-9	4,615	0.041	0.992	1,448	-0.130	1.013	-0.171***	0.030
Age 10-12	4,160	0.069	0.988	1,844	-0.156	1.010	-0.225***	0.028
Age 13-15	2,616	0.088	0.974	1,498	-0.154	1.027	-0.242***	0.033

Note: Standard error estimates of the difference assume unequal variances.

Table 6. Descriptive Statistics

	N	All		No Jobloss		Any Jobloss	
		% (Mean)	SD	% (Mean)	SD	% (Mean)	SD
Race -Hispanic	1,904	19.6	.	18.6	.	21.1	.
Black	2,791	28.7	.	25.3	.	34.3	.
White	5,035	51.7	.	56.0	.	44.6	.
Male Child	4,984	51.2	.	51.1	.	51.5	.
Mother age first birth	4,358	22.8	5.5	23.8	5.7	21.4	4.8
Mother Education (years)	4,357	13.2	2.6	13.5	2.8	12.8	2.4
Ages 0-3	6,110	17.4	.	17.7	.	15.5	.
Single Mother	1,951	22.9	.	21.7	.	35.4	.
Coresiding	512	6.0	.	5.8	.	8.0	.
Two Parent Married	6,042	71.0	.	72.4	.	56.6	.
Household Size	8,510	4.2	1.4	4.2	1.3	4.2	1.5
Income Missing	1,405	16.5	.	16.6	.	15.8	.
Income quartile 1	1,893	22.2	.	20.9	.	36.6	.
Quartile 2	1,839	21.6	.	21.7	.	21.2	.
Quartile 3	1,687	19.8	.	20.3	.	14.9	.
Quartile 4	1,686	19.8	.	20.6	.	11.5	.
Ages 4-6	7,170	20.4	.	20.3	.	21.4	.
Single Mother	2,953	28.7	.	27.4	.	40.6	.
Coresiding	693	6.7	.	6.4	.	9.6	.
Two Parent Married	6,629	64.5	.	66.2	.	49.7	.
Household Size	10,280	4.3	1.4	4.3	1.4	4.4	1.7
Income Missing	1,760	17.1	.	17.3	.	15.6	.
Income quartile 1	2,204	21.4	.	19.9	.	35.2	.
Quartile 2	2,194	21.3	.	21.1	.	23.9	.
Quartile 3	2,058	20.0	.	20.6	.	14.7	.
Quartile 4	2,064	20.1	.	21.1	.	10.7	.
Ages 7-9	7,607	21.7	.	21.5	.	22.7	.
Single Mother	3,303	31.0	.	29.7	.	41.4	.
Coresiding	800	7.5	.	7.1	.	10.8	.
Two Parent Married	6,567	61.5	.	63.1	.	47.8	.
Household Size	10,674	4.4	1.4	4.4	1.4	4.3	1.6
Income Missing	1,868	17.5	.	17.7	.	16.2	.
Income quartile 1	2,267	21.2	.	19.7	.	34.8	.
Quartile 2	2,215	20.8	.	20.3	.	24.3	.
Quartile 3	2,147	20.1	.	20.9	.	13.7	.
Quartile 4	2,177	20.4	.	21.5	.	11.0	.

(cont.)

Table 6. Descriptive Statistics (%) (*continued*)

	N	All		No Jobloss		Any Jobloss	
		% (Mean)	SD	% (Mean)	SD	% (Mean)	SD
Ages 10-12	7,373	21.0	.	21.0	.	21.1	.
Single Mother	3,362	33.8	.	32.6	.	44.8	.
Coresiding	715	7.2	.	6.7	.	11.6	.
Two Parent Married	5,865	59.0	.	60.7	.	43.5	.
Household Size	9,943	4.4	1.5	4.4	1.4	4.3	1.7
Income Missing	1,797	18.1	.	18.0	.	19.0	.
Income quartile 1	2,017	20.3	.	18.8	.	33.6	.
Quartile 2	2,086	21.0	.	20.7	.	23.8	.
Quartile 3	1,972	19.8	.	20.7	.	12.2	.
Quartile 4	2,071	20.8	.	21.9	.	11.3	.
Ages 13-15	6,802	19.4	.	19.4	.	19.3	.
Single Mother	3,078	35.3	.	33.9	.	47.2	.
Coresiding	616	7.1	.	6.7	.	9.8	.
Two Parent Married	5,033	57.7	.	59.4	.	43.0	.
Household Size	8,728	4.3	1.4	4.3	1.4	4.2	1.5
Income Missing	1,494	17.1	.	17.1	.	16.9	.
Income quartile 1	1,788	20.5	.	18.7	.	35.4	.
Quartile 2	1,812	20.8	.	20.5	.	22.9	.
Quartile 3	1,846	21.2	.	21.9	.	15.2	.
Quartile 4	1,788	20.5	.	21.8	.	9.6	.

Table 7. Fixed Effects for Jobloss Since Last Wave

	All Causes	Layoff, Closure	Discharge
PPVT (N=12,217 Children= 3,443)			
Jobloss Last Wave	-4.253* (1.830)	-4.023+ (2.421)	-4.270+ (2.406)
Jobloss X Age 4-6	3.671+ (2.072)	3.296 (2.733)	3.474 (2.772)
X Age 7-9	3.964+ (2.170)	3.662 (2.734)	4.132 (3.278)
X Age 10-12	4.500* (2.039)	4.259 (2.655)	4.880+ (2.762)
X Age 13-15	3.096 (3.217)	3.116 (3.949)	2.458 (5.175)
Math (N=21,508 Children= 3,495)			
Jobloss Last Wave	-0.599 (0.728)	-1.363 (0.889)	0.725 (1.133)
Jobloss X Age 7-9	0.318 (0.906)	1.424 (1.081)	-1.283 (1.526)
X Age 10-12	0.589 (0.887)	1.241 (1.067)	-0.362 (1.484)
X Age 13-15	0.873 (1.052)	2.510* (1.269)	-3.197+ (1.649)

Note: Standard errors in parentheses The reference category for age in the PPVT model is 0-3 and in the Math and Reading models is 4-6. All models included controls for age group, sex, family structure, household size, mother's education, region and family current income (quartiles).
+ p<0.10, * p<0.05, ** p<0.01, *** p<0.001.