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Temporal Changes to the Added Worker Effect Associated with Spousal Job Loss*

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Abstract: This paper utilizes the 1968-2019 survey waves of the Panel Study of Income Dynamics to analyze the added worker effect for wives of husbands who lose their job through no fault of their own. Specifically, we focus on the potential changes to the added worker effect over time. For wives who were non-employed prior to their husbands' job loss, our results show that the added worker effect has declined over time; the effect is U-shaped for wives working part-time pre-displacement. Further, heterogeneity exists across age groups. The added worker effect is largest and more persistent across decades for women who are relatively younger at the time of their husbands' job loss, ages 20-39. Although the magnitude of the added worker effect declined from the 1970s to the 2000s, it is still a mechanism through which households adjust to spousal job loss, particularly part-time working wives shifting to full-time employment. Finally, displaced husbands are increasingly more likely to be employed part-time following their own displacement.

JEL Codes: J22; J63; J65

Keywords: Added worker effect; job displacement; women's labor supply

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1. INTRODUCTION

The added worker effect (AWE) is the change to individual labor supply in response to negative income shocks experienced by one's spouse and is theoretically rooted in models of joint household labor supply decisions. Research on the AWE historically focuses on married women's labor supply adjustments in response to a husband's job loss or spell of unemployment; results from this literature are mixed and range from no AWE to an 11% increase in labor supply (e.g., Lundberg, 1985; Maloney 1987, 1991; Spletzer, 1997; Cullen & Gruber 2000; Stephens, 2002; Juhn & Potter, 2007).¹ In this paper, we revisit the AWE associated with wives' labor supply decisions. Specifically, we analyze whether the magnitude of the AWE has changed over time during the last half of the 20th Century. To do so, we use data from the 1968-2019 survey waves of the Panel Study of Income Dynamics (PSID) and examine wives' labor supply responses to husbands' involuntary job losses separately by the decade in which the displacement occurred. Since temporal variation in labor supply may exist because of changes in decision-making over the life cycle, we further explore the AWE by the wife's age at the time of separation. Throughout the 20th Century, broad changes to social/cultural norms and labor market institutions occurred that affected female labor supply decisions. Therefore, results from our analysis allow for a better understanding of the interplay between changes in social norms and family labor supply decisions.

Goldin (2006), Stevenson and Wolfers (2007), Goldin and Mitchell (2017), and Brendemuehl and Jolly (2021) provide extensive summaries of changes in economic institutions and cultural norms that impacted women's labor supply decisions, particularly married women, throughout the 20th Century. Increased labor demand for office workers, the creation of part-time

¹ A few recent studies also consider a husband's labor supply adjustment in response to his wife's job loss or unemployment (Illing, Schmieder, & Trenkle, 2021; Guner, Kulikova, & Valladares-Esteban, 2023). Some research exists analyzing the AWE in response to negative spousal health shocks (e.g., Jolly & Theodoropoulos 2023).

work schedules, the elimination of marriage bars, and technological innovations in not only the office, but also the household led to large increases in female labor force participation. Over the last several decades (1950s to 2000s), women's labor force participation nearly doubled from 32% to 60%, employment levels of married women increased almost 250%, and the subset of couples with an employed husband and a wife who is not participating in the labor market declined by over 50% (U.S. Bureau of Labor Statistics, 2024a, 2024b; Juhn & Potter, 2007). The gender gap in college enrollment/completion rates was eliminated, and the gap in college major narrowed considerably. Finally, the returns to education increased faster for women relative to men.

It is reasonable to expect that these changes in cultural, social, and economic norms that influenced female labor supply decisions during the 20th Century could also affect the AWE; however, the direction is ambiguous. The historical changes in women's labor force participation and expansion of labor market opportunities may reduce the AWE over time as women are increasingly likely to already be participating in the labor market when their husbands experience an involuntary job loss. This would leave little room for adjustments in labor supply at either the extensive or intensive margins, particularly for those working full-time. In contrast, the AWE may increase over time in conjunction with women's improved labor market opportunities, both for nonparticipating wives looking to enter the labor force and working wives looking to adjust their labor supply along the intensive margin.

The AWE literature traditionally focuses on hours worked or the probability of employment (e.g. Lundberg, 1985; Stephens, 2002; Mankart & Oikonomou, 2016). While examining these two outcomes is important, doing so overlooks potentially important labor market transitions, such as moving from non-employment to employment or transitioning from part- to full-time work. We begin by following the standard approach in the literature by focusing on hours

worked and the probability of employment. Then, we focus on specific channels through which the AWE is most likely to operate. Specifically, we analyze two sub-samples of wives, those who are non-employed and those employed part-time, both two years before their husbands' displacement.

When focusing on changes to labor supply decisions during different decades, results show that the AWE among the sample of non-employed wives declines. For job losses occurring in the 1970s, the probability of wives' employment increases by 31 percent. By the 2000s, the employment effect is 3 percent. Among the sample of wives employed part-time prior to job loss, the probability of obtaining full-time employment post-displacement increases by 60 percent for displacements occurring in the 1970s, but only 29 percent for job losses occurring in the 2000s. Results further show persistent variation in the AWE across the age of the wife at the time of her husband's displacement. We find strong evidence of an AWE among women who are younger, in their 20s and 30s, at the time of their husband's job loss; however, we observe no significant increases in labor supply for women in their 50s at the time of displacement. Thus, we also find an overall decline in the AWE as the wife's age at the time of displacement increases. When combining calendar time and the life cycle, we find a persistent AWE across decades among the sample of women under age 40. Evidence of an AWE exists for older women pre-1990, but the effect dissipates by the 1990s.

The decline in the AWE over time and throughout the course of the life cycle suggests that families are having an increasingly harder time self-insuring against involuntary job losses experienced by the main earner, suggesting that displacement is having an increasingly deleterious effect on familial financial resources. In fact, we show that total family income declined 13.7% in the 1970s following the husband's job displacement, whereas job losses occurring in the 2000s

reduce income by 19.7%. Lastly, we show that displaced men are increasingly more likely to be employed part-time following job loss across both decades and age. Combined, our results suggest a growing need for increases in social insurance to aid those experiencing job displacement.

The rest of the paper proceeds by briefly discussing the relevant literature (Section 2). We then discuss our data and empirical methodology in Section 3. Section 4 presents our results, and concluding remarks are offered in Section 5.

2. LITERATURE REVIEW

The literature finds mixed evidence on the added worker effect in the US.² Early research often focused on husbands' unemployment, finding limited evidence of changes in married female labor supply (Mincer, 1962; Heckman & MaCurdy, 1980; Lundberg, 1985; Maloney, 1987, 1991; Spletzer 1997; Dynarski & Gruber, 1997; Cullen & Gruber, 2000). Although, Maloney (1987) finds some evidence of an added worker effect when accounting for additional household constraints on labor supply. However, a few recent studies focus on husbands' unemployment or non-employment spells and find more evidence in support of the phenomena. Mankart and Oikonomou (2016) and Juhn and Potter (2007) find the added worker effect for married women increased from the 1970s/1980s to 2000s/2010s. Similarly, Starr (2014) finds the added worker effect for women was particularly strong during the 2007-2009 Great Recession.

A smaller strand of literature focuses on job loss or displacement. Stephens (2002) highlights the need to focus on job displacement instead of unemployment for several reasons. First, not all unemployed individuals are displaced workers, and not all displaced workers experience unemployment. Thus, using unemployment spells to estimate the added worker effect

² Several studies find that nonlabor income sources, such as unemployment insurance, welfare programs, and taxes, may crowd out spousal labor supply (Dynarski & Gruber, 1997; Cullen & Gruber, 2000; Hardoy & Schone, 2014). Since these programs vary across countries and governments, we focus on the literature specific to the AWE in the US.

excludes a portion of job losers and likely underestimates the true effect in response to involuntary job loss. Second, unemployment is often considered a transitory state with temporary earnings losses (Lundberg, 1985; Ruhm, 1991), while job displacement is associated with permanent reductions to labor income (e.g., Hamermesh, 1989; Jacobson, LaLonde, & Sullivan, 1993; Couch & Placzek, 2010). Stephens (2002) finds a large added worker effect for married women whose husbands lose their job from 1980 to 1992, but no effect for displacements before 1980. Garcia-Perez and Rendon (2020) find support for the added worker effect in response to job separation (for both partners), particularly during economic downturns.

There are also different approaches in the literature for measuring labor supply adjustments associated with the added worker effect for married women. Some have used changes in employment or labor force status, whereas others use changes in hours worked. Changes in employment status can be static (Mincer, 1962; Maloney, 1987), but Lundberg (1985) highlights that this approach allows researchers the ability to isolate joint labor market transitions associated with the added worker effect. Early work using flows between labor market states often found limited evidence in support of married women increasing their labor supply in response to spousal unemployment (Lundberg, 1985; Spletzer, 1997). In contrast, recent work supports the added worker effect, which continues to highlight the mixed evidence in the literature (Juhn & Potter, 2007; Mankart & Oikonomou, 2016; Guner, Kulikova, & Valladares-Esteban, 2023).

Other studies use intensive margin labor supply measures to analyze the added worker effect, such as changes in hours worked or transitions from part- to full-time employment, with mixed evidence. Heckman and MaCurdy (1980) and Maloney (1987) do not find evidence that married women adjust their hours worked in response to spousal unemployment, whereas Stephens

(2002) and Blundell et al. (2016) find married women are significantly more likely to increase their hours worked following spousal job loss or a permanent spousal wage shock.

Our analysis is closely related to Stephens (2002), Juhn and Potter (2007), and Mankart and Oikonomou (2016), all of which analyze temporal changes to the AWE and find evidence that the probability of employment following spousal job loss or unemployment increased over time. We contribute to this literature along a few dimensions. First, each of the earlier papers analyzes changes to the AWE along the dimension of calendar time. However, Goldin and Mitchell (2017) note that temporal changes may also occur because of progression throughout the life cycle. In our analysis, we examine potential changes to the AWE along both dimensions. Second, Juhn and Potter (2007) and Mankart and Oikonomou (2016) analyze the AWE as husbands transition from a state of employment to a state of unemployment using the Current Population Survey (CPS). However, a transition to unemployment may be endogenous and not a true shock. Moreover, as Stephens (2002) highlights, unemployment spells are transitory, while job loss/displacement is a permanent shock. Furthermore, the ability to follow couples over time is limited in the CPS. We use all 52 years of data from the PSID and focus on how wives respond to their husband's involuntary job loss, an arguably more exogenous shock than transitions to unemployment.

Finally, our analysis builds upon Stephens (2002), who uses the 1968-1993 waves of the PSID and finds a large, positive AWE for job losses occurring after 1980, but no increase in wives' labor supply when job losses occur before 1980. Given the large amount of data available in the PSID since the time of Stephens' (2002) analysis, we extend his work to include more recent decades of data and further focus on changes to the AWE over the wife's life cycle. We also focus our analysis of the AWE by considering the sample of wives most likely to adjust their labor supply after spousal job loss, those who are initially non-employed or employed part-time.

3. DATA & METHODOLOGY

We use data from the 1968-2019 survey waves of the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal survey that began in 1968 with an initial sample of approximately 5,000 families. The PSID followed these initial families and their split-offs (i.e., children who have grown up and formed their own families) annually until 1997 and biennially thereafter. The PSID added an oversample of Latino households in 1990 and an oversample of immigrants in 1997 and 1999. We follow the literature and remove these two oversampled groups from the analytical sample used in the main analysis.

One major advantage of the PSID is the ability to follow individuals or family units over time. Our unit of analysis is an opposite-sex couple where both the husband and wife are between 20 and 60 years old with at least two usable observations. We focus on opposite-sex couples because the PSID did not formally follow same-sex couples until 2017. A usable observation is one where each partner has valid demographic and labor market information on age, race, state of residence, annual hours worked, labor earnings, and total family income. The PSID classifies a couple as two individuals who are either legally married or who have been cohabiting for at least 12 months. Thus, we focus on opposite-sex couples, and each couple in the sample can be legally married or cohabiting. For simplicity, we refer to all women as wives and all men as husbands regardless of the couple's marital status. We allow couples to enter the sample in any year, and we follow them until the couple attrites from the PSID for any reason.

Given our focus on labor market adjustments in response to spousal job loss, another advantage of the PSID is the ability to identify *involuntary* job losses. We identify displaced husbands as those who leave their previous employer within the last year because either the company shut down or because they were laid-off/fired. The PSID does not separate the category

of laid-off from that of being fired for cause; therefore, we may not capture purely exogenous changes in employment. However, Stevens (1997) notes that only 16% of those reporting lay-off/fire are fired for cause. As is standard in the literature, we restrict our attention to following couples over time relative to the first displacement since any subsequent job loss may be endogenous to the initial one. To ensure that we can compare spousal labor supply changes before and after displacement, we require all couples with a displaced husband to be present in the main sample for at least one year prior to the husband's first reported job loss. This requires us to remove all couples where the husband reports his first job loss during the 1968 survey. Finally, we restrict the sample of displaced couples to those where the husband loses his job while he is between 25 and 54 years old. Summary statistics of the main sample based upon displacement status are presented in table 1. We calculate all statistics using the first usable observation for each couple.

When comparing the displaced to the non-displaced, table 1 shows only minor differences between non-displaced husbands and those who eventually lose their jobs through no fault of their own. The displaced tend to have higher probabilities of being employed; however, they are more likely to be employed part time, tend to work slightly fewer hours per year, and earn approximately \$3,500 less annually. The eventually displaced also tend to be somewhat younger with fewer years of formal schooling and are more likely to be non-white relative to their non-displaced counterparts. Again, though, these differences are small. When comparing wives by displacement status, we see some of these same differences. The wives of displaced husbands are relatively younger, less educated, and earn approximately \$4,000 less per year than the wives of the non-displaced. Interestingly, we see larger differences with regards to annual hours worked. Wives of displaced husbands work 113 hours per year less than their non-displaced counterparts, which translates to approximately three and a half fewer weeks of full-time (32 hours per week) work.

Moreover, unlike the case for men, wives of displaced husbands tend to have smaller probabilities of employment prior to their husband's job loss.

Given this paper's focus on the effects of job loss on labor supply over time, table 2 presents tabulations of the number of job losses based on the decade and wife's age during which the displacement occurred. As table 2 shows, the number of displacements is highest in the 1980s, and lowest in the 2000s. Since most displacements occur when individuals are younger and there is a strong correlation between a husband's and wife's age (~95% in our sample), it is unsurprising that wives of displaced husbands tend to also be younger at the time of the spouse's job loss.

To examine the AWE over time, we use a standard two-way fixed effects model. The general form of the estimated equation is:

$$y_{it} = x'_{it}\beta_1 + \delta_1 D_{it}^{k \geq 0} + \alpha_i + \theta_r + \gamma_t + u_{it} \quad (1).$$

In equation (1), y_{it} is a measure of labor market outcomes of wife i at time t . We begin with two standard measures of labor supply: annual hours worked to measure labor supply decisions at the intensive margin, and a binary employment indicator to measure labor supply at the extensive margin. Therefore, we estimate equation (1) twice, once for each dependent variable. We also supplement our primary labor supply outcome variables with annual earnings, both log and levels.

The vector x_{it} contains a quartic in age, γ_t is a set of calendar year fixed effects, θ_r is a set of state-of-residence fixed effects, and u_{it} is the random error term. Finally, the term α_i is a couple fixed effect that accounts for any time-invariant, unobservable household characteristics that may be correlated with the wife's labor supply and the probability of spousal job loss. Given that table 1 shows that there may be some inherent differences between displaced and non-displaced couples, it is important to include couple fixed effects in the estimation.

The term $D_{it}^{k \geq 0}$ is a displacement dummy variable. Here, k indexes time relative to the first reported job loss with $k = 0$ being the year of the first report. Therefore, $D_{it}^{k \geq 0}$ equals one for every year after the husband's first displacement, including the year of the first report. Estimates of δ_1 provide an estimate of the average annual effect that a husband's job loss has on his wife's labor supply decisions. A key assumption for identification with the two-way fixed-effects model is the parallel trends assumption. To assess the potential validity of this assumption, and to investigate any inter-temporal relationship between spousal job loss and labor supply, we supplement equation (1) with an event history analysis. Here, the general form of the estimated equation is

$$y_{it} = x'_{it}\beta_1 + \sum_{k \leq -10}^{k \geq 10} \delta_k D_{it}^k + \alpha_i + \theta_r + \gamma_t + u_{it} \quad (2).$$

In equation (2), all variables are as before. In the series of treatment dummy variables, the omitted treatment period is the year prior to the first reported job displacement.

We first estimate the AWE for the full sample, years 1968 to 2019. Then, to investigate how the AWE may have changed over time and across the life cycle, we estimate equation (1) after selecting the treated sample in different ways. First, we focus on the AWE by calendar time using the decade of job loss. To do so, we restrict the treatment group to only include couples where the husband experiences his first job loss in the decades listed in table 2. For example, to estimate the AWE in the 1980s, we restrict the treated sample to those couples where the husband reports his first job loss between 1980 and 1989. Importantly, as in Stephens (2002), we use all years of data in each estimation. In other words, when estimating the AWE in the 1980s, we still incorporate data from the 1970s, 1990s, and 2000s. We simply restrict the job losses to occur in the 1980s. It is possible for husbands to lose their job in 1969. Since this is only one year in the 1960s, we classify job losses in 1969 as occurring in the 1970s. Second, when focusing on the wife's age at the time of job loss we restrict the treated sample to those wives who are in the age

groups presented in table 2 when their husband loses his job. As an example, to estimate the AWE for 20-year olds, we restrict the treatment group to those women who are in their 20s when their husbands experience their first displacement.

To better isolate the channels through which the added worker effect may operate, we further restrict the treatment group based on wives' working status prior to the husband's displacement. We focus on two samples: wives who are non-employed and wives who are employed part-time two periods prior to their husband's job loss.³ We use two periods prior to displacement because of the biennial nature of the PSID starting in 1997. If the year prior to job loss were used, then anyone reporting displacement after 1997 would be eliminated from the analysis. Further, Stephens (2002) notes how wives may adjust their labor supply shortly before the husbands' job loss. Therefore, using the period two years before displacement should help to mitigate any potential anticipatory effects.

4. RESULTS

Labor Market Impacts from Job Displacement

The added worker effect highlights the potential for households to smooth their income in response to negative shocks, such as job loss, through spousal labor supply adjustments. To motivate the phenomena, we first illustrate the negative impacts of the husband's job loss on his own labor market outcomes. Table 3 shows estimates from equation (1) on the impact of the husband's job loss on his own annual earnings, hours worked, and probability of employment. We consistently see that displacement has a negative, significant impact on the husband's labor market outcomes: labor earnings decline by almost \$15,000 (or 25 percent) per year and he reduces his annual hours worked by 162 hours, which amounts to approximately five weeks (assuming a 32

³ We define full-time work as working at least 32 hours per week for 48 weeks of the year (1,536 hours).

hour work week). Displacement also reduces the probability of employment by 1.3 percentage points. These results confirm the negative earnings and employment impacts associated with job loss.

The displacement literature has shown that the negative effects documented above persist for many years after the initial job loss. To show that this occurs in our sample, we present estimates from equation (2) using the husband's labor market outcomes as dependent variables. Results are in table 4. Displaced husbands persistently experience reduced earnings, hours worked, and probability of employment for the entire follow-up period relative to the control group of never-displaced husbands. The event study also allows us to assess the validity of the parallel trends assumption required for identification with two-way fixed effects models. Although we observe several statistically significant estimates in the pretreatment period (particularly for the log of earnings, level earnings and hours worked), all pre-treatment coefficients are positive. In other words, in the periods leading up to job loss, eventually displaced husbands have higher earnings and hours worked in comparison to non-job losers.

Added Worker Effect

Tables 3 and 4 establish persistently negative impacts of a husband's job loss on his own labor market outcomes. Given the observed drop in the husband's earnings following his own job loss, we now turn to analyzing whether this negative financial shock translates into an increase in his wife's labor supply. Table 5 presents the primary AWE estimates from equation (1). In the aftermath of the husband's job loss, we find small, positive changes in the wife's labor supply and earnings. Wives of displaced husbands increase their annual earnings by 2.6 percent, hours worked per year by 23 hours, and likelihood to be employed by 0.37 percentage points. However, all estimates are statistically insignificant and economically small. When moving to the event history

analysis in table 6, there is some evidence of an AWE. The effect of spousal job loss significantly increases hours worked in the periods 5, 6, 7, and 9 years after displacement. However, aside from period $t+7$, the coefficients are marginally significant at the 10 percent level and are economically small, leading to one to two additional weeks of work during the year. Combining the results in tables 5 and 6, we generally conclude that there is little evidence of the AWE on average when using the entirety of the PSID data. Further, the event study results do support the parallel trends assumption as we observe little statistical significance in the pretreatment period.

Added Worker Effect by Decade

Our baseline analysis thus far uses PSID data for years 1968 to 2019, which coincides with a period of significant change for women in the US. Women's labor force participation nearly doubled from 1960 to 2000, and married women's likelihood of working, regardless of spousal job loss, significantly increased during the sample timeframe used here. Thus, women's ability to adjust their labor supply may vary over time. To this end, table 7 presents estimates of the AWE from equation (1) by restricting the treatment group to those wives whose husbands experience their first displacement during the four decades listed in table 2: (A) the 1970s, (B) the 1980s, (C) the 1990s, and (D) the 2000s. Results show that in the 1970s, spousal job loss has no effect on the probability of employment or annual hours of work for wives. The coefficients are small in magnitude and insignificant at conventional levels. In fact, the coefficient is negative for the probability of employment. In contrast, for displacements occurring in the 1980s, there is strong evidence of wives increasing their labor supply after their husbands' displacement. Annual hours of work increase by 95 (approximately three weeks) (significant at the 1 percent level) and employment probability increase by 4.3 percentage points (significant at the 5 percent level).

The results in the first two panels of table 7 qualitatively match Stephens (2002) quite closely. Stephens (2002) also only finds evidence of an AWE for job losses occurring from 1980 to 1993. The 1980s were a period of strong labor market activity that favored sectors traditionally dominated by women, such as retail and service (Plunkert, 2015). Women's relative wage also began to increase and women's labor force participation passed 50% for the first time in the 1980s (U.S. Bureau of Labor Statistics, 2024a; Blau and Kahn, 2007). Further, the gender balance in enrollment at four-year colleges was also perfectly equal in 1980, and quickly began to favor women (Leukhina & Smaldone, 2022). In other words, the 1980s represents a decade of significant labor market progress for women. This fact is evidenced when examining average annual hours worked by decade. In our sample, average hours worked by wives in the 1970s equaled 788 hours. Throughout the 1980s, average annual hours of work equaled 1,131, which is an increase of 343 hours (approximately 10 weeks of full-time employment). Therefore, results in table 7 suggest that while there was room for women to adjust their labor supply upon a husband's displacement in the 1970s, the growing economic opportunities for women in the 1980s made doing so feasible.

As we continue through time in table 7, results show no AWE associated with spousal job losses in the 1990s or the 2000s. In fact, each coefficient is economically small and insignificant at conventional levels. This suggests that the AWE may have declined over time. In other words, given the large gains made by women in the 1980s, there was little room for adjustment in the 1990s and 2000s on average. Again, the mean annual hours worked by decade suggests that this may be true. Average female annual hours worked in the 1990s is 1,350 (roughly 42 weeks of full-time work). In the 2000s, the average annual hours for women equals 1,428 (44 weeks of work).

The added worker effect may be more nuanced than the probability of employment or hours worked as presented in table 7. In other words, the results in table 7 ignore transitions across

different labor market states, such as shifting from non-employment to employment or shifting from working part-time to full-time. Therefore, our analysis across time further restricts the treatment group to focus on the channels through which the AWE is most likely to operate: the sample of wives who are non-employed or employed part-time two years prior to their husband's job displacement. Results from equation (1) in table 8 do just that. The first three columns restrict the treatment group to wives who are non-employed two years prior to their husband's displacement, and the outcome variables measure the probability of employment, part-time employment, and full-time employment.⁴ The last column restricts the treatment group to wives who are employed part-time prior to their husband's displacement, and the outcome variable measures the probability of full-time employment.

Focusing on the sample of non-employed wives prior to their husband's displacement, the results in table 8 reveal a strong significant added worker effect in the 1970s, 1980s, and 1990s. Wives who are non-employed two periods prior to their husband's job displacement significantly increase their probability of employment by over 18 percentage points following the displacement in the 1970s and 1980s and by 14 percentage points in the 1990s. This increased probability is mostly driven by gains in part-time employment. For job losses in the 2000s, we observe no significant AWE among this sample of wives. Given the decline in the coefficients from the 1970s to the 2000s, it appears that the AWE has declined over time. To put these coefficients into context, appendix table A.1 shows the summary statistics for wives' working status prior to their husband's displacement by decade. Relative to the pre-displacement sample mean, the probability of employment among non-employed wives increases by 31% in the 1970s, 26% in the 1980s, 17%

⁴ The sum of the part-time and full-time coefficients sum to equal the coefficient for employment since the two categories are mutually exclusive options for types of employment.

in the 1990s, and (an insignificant) 3% in the 2000s following job loss, which shows a consistent decline in the AWE from the 1970s.

When focusing on wives working part-time pre-displacement, we observe a strong, significant increase in the probability of full-time employment in each decade: 14.1 percentage points in the 1970s, 16.3 points in the 1980s, 7.9 points in the 1990s, and 16.6 points in the 2000s. Relative to the sample mean of wives' probability of full-time employment prior to displacement, this translates to increases of 60% in the 1970s, 43% in the 1980s, 15% in the 1990s, and 29% in the 2000s, which shows more of a U-shaped trend over time. Thus, increases in labor supply in response to spousal job loss have diminished over time for non-employed wives, but they remain an important channel of the AWE among wives employed part-time prior to displacement.

By Age

It is also possible that experiences associated with changing social, economic, and cultural norms varied for women based on their life-cycle phase. To this end, we now focus on estimating the AWE across a second measure of time: age at the time of spousal job displacement. Table 9 presents estimates of the AWE across four age categories at the time of displacement: 20-29, 30-39, 40-49, and 50+. For those who are non-employed prior to spousal job loss, we observe a significant added worker effect among wives in their 20s (panel A) and 30s (panel B) at the time of displacement equaling 25.1 and 22.0 percentage points (both $p < 0.01$), respectively. The coefficients for part-time versus full-time employment for previously non-employed women in their 20s are relatively equal (approximately 12-13 percentage points; $p < 0.01$), while the increase in part-time employment (15.4 pp; $p < 0.01$) is much larger than the increase in full-time employment (6.6 pp; $p < 0.01$) for previously non-employed wives in their 30s at the time of job

loss. We do not observe any significant increase in employment for wives who are age 40 or older at the time of displacement and were non-employed pre-job loss.

To place these coefficients into perspective, we calculate the pre-displacement means of each employment category by age in appendix table A-2. The descriptive statistics show that the probability of employment is stable for women in their 20s, 30s, and 40s, but it decreases for women in their 50s at the time of job loss. For example, 75% of women in their 20s, 30s, and 40s are employed pre-displacement compared to 61.7% of women ages 50 and up. Relative to these means, among wives in their 20s and 30s who were previously non-employed, the estimates in table 9 translate to a 33% and 29% increase in the probability of employment, respectively. The associated increase in the likelihood of part-time and full-time employment are similar for non-employed women in their 20s, approximately 32-34%. In contrast, the impact to part-time employment, 47.3%, is larger compared to full-time employment, 15.4%, for women in their 30s.

The added worker effect among non-employed wives is solely driven by younger women, those under age 40 at the time of their husbands' employment separation. In contrast, we observe that women in their 20s, 30s, and 40s who are employed part-time pre-displacement increase their likelihood of full-time employment following spousal job loss. For the sample of wives employed part-time (column 4), transitions to full-time employment continue to be an important component of the AWE. We estimate an increase in the probability of full-time employment of 20.1 percentage points ($p < 0.01$) for ages 20-29, 10.4 percentage points ($p < 0.01$) for ages 30-39, and 13.0 percentage points ($p < 0.01$) for ages 40-49. Relative to the pre-displacement means for each group shown in appendix table A-2, we observe increases of 52.5%, 24.3%, and 29.0% in the probability of full-time employment for wives in their 20s, 30s, and 40s, respectively. Overall, we observe the strongest impacts among wives in their 20s at the time of job loss, suggesting that the AWE

declines with age. It is possible that older couples are in a better financial position to self-insure against unexpected job loss as it takes time to build up wealth and financial security. Alternatively, older individuals are more likely to non-employed after job loss (Chan & Stevens 2001). Therefore, older women may not feel compelled to work after their husbands lose their job in order to partake in joint leisure. They may also feel more social pressure to not work as they possibly feel that antiquated social and cultural norms still apply to them.

By Decade and Age

The results thus far indicate a diminishing AWE from the 1970s to 2000s, and an AWE that generally decreases with the wife's age at the time of displacement. Therefore, we also consider changes in the AWE over both measures of time, by decade and age, to determine whether life cycle differences vary across calendar time as women's labor market activity significantly improved from the 1970s to 2000s. Given the results by age in table 9, we condense our age categories for these analyses to two: wives under age 40 and those 40 and older at the time of displacement. Table 10 presents estimates for the AWE for wives under 40, and table 11 presents analogous estimates for wives over 40.

We continue to see a stronger AWE among wives who are younger at the time of spousal job loss. For wives under age 40 at the time of displacement (table 10), those who are non-employed pre-job loss increase their probability of employment by 23.3 percentage points ($p < 0.01$) in the 1970s and 1980s, 24.8 percentage points ($p < 0.01$) in the 1990s, and 14.8 percentage points ($p < 0.10$) in the 2000s. The shift to employment is slanted towards part-time employment through the 1990s for younger wives (13.9 to 18.1 pp; $p < 0.01$). Relative to the pre-displacement means presented in appendix table A-3, we still observe a declining trend in the AWE from the 1970s to 2000s for non-employed wives pre-displacement; however, the effects remain significant

in each decade. In contrast, we observe no significant change in the probability of employment among the sample of non-employed wives pre-displacement who are over 40 (table 11).

The results in tables 10 and 11 also provide evidence of an AWE among wives who are employed part-time prior to their husband's displacement, although the impact is, again, more persistent for wives under 40. Younger wives employed part-time pre-displacement increase their probability of full-time employment by 16.1 to 16.9 percentage points in the 1970s, 1980s, and 2000s; although, we do not observe any significant change in the 1990s. The sample of part-time employed wives who are at least 40 at the time of displacement are 9.8 pp ($p < 0.10$) and 15.3 pp ($p < 0.05$) more likely to be employed full-time following job loss in the 1970s and 1980s, respectively, with no significant change in the 1990s or 2000s. The results continue to support the notion that the AWE is driven by younger women, those under 40 at the time of their husband's displacement. Although the overall AWE in the 2000s only operated through the sample of women employed part-time pre-displacement (table 8), we observe a more persistent AWE across decades for both non-employed and part-time employed younger women. Among older wives (40+), we continue to find evidence of an AWE among those who are employed part-time prior to displacement, but the effect is only significant through the 1980s.

Earnings and Income

The theoretical explanation underlying the added worker effect is the smoothing of income fluctuations via adjustments in spousal labor supply. Our results support the existence of the AWE, but they also suggest that the phenomenon has declined over time and is more prominent among younger couples. This leads to the question of whether the income shock associated with job displacement has worsened over time and/or is larger for older couples. Therefore, we now

examine changes to the husband's labor earnings, wife's labor earnings, and total family income (all in logs) following job loss by decade and the wife's age at time of displacement.

Table 12 presents estimates for the change in log earnings for the husband, wife, and family income by decade. As expected, we find a strong, negative impact to the husband's earnings following his own job loss. After their own displacement, the husband's earnings decline 22.5% in the 1970s, 27.8% in the 1980s, 21.6% in the 1990s, and 30.2% in the 2000s. The point estimates for women's earnings are all positive, but they are also all statistically insignificant. This finding is relatively unsurprising given that the main channel through which the AWE operates is through moving from non-employment to part-time work. The fall in husbands' earnings, combined with little-to-no increase in the wives' earnings leads to a significant drop in family income following the husband's job loss. In conjunction with the added worker effect declining over time, the income losses associated with displacement have generally increased over time, too, from 13 percent in the 1970s to nearly 20 percent in the 2000s.

The earnings and income results by the wife's age at the time of displacement are presented in table 13. We continue to observe strong, negative impacts to the husband's earnings and non-significant changes to the wife's earnings post-displacement, across all age categories. Our results suggest that the added worker effect declines with age. Therefore, it is unsurprising that the decline in family income increases as wives' age at the time of displacement increases, ranging from 12 percent for wives in their 20s to 18 percent for those 50 years old or older.

Husband's Employment Outcomes

It is also possible that the declining AWE over time or the lack of AWE among older workers is due to displaced husband's securing new employment following their job loss. Therefore, we consider the husband's employment outcomes following job displacement by

decade and the wife's age at the time of displacement. Tables 14 and 15 present results for the husband's employment status by decade and the wife's age, respectively. Across both tables we observe a persistent decline in the husband's probability of full-time employment following their own job loss. For example, displaced husbands are 5.9 to 12.1 percentage points ($p < 0.01$) less likely to be employed full-time across decades and 7.1 to 11.2 percentage points ($p < 0.01$) less likely across age categories. These full-time employment declines are increasing across both decades and age. We do find increases in the probability of part-time employment among displaced husbands, a 5.0 to 9.6 percentage point increase across decades ($p < 0.01$) and a 5.8 to 12.1 percentage point increase across age categories ($p < 0.01$). Together, the results in tables 14 and 15 illustrate that an additional avenue through which households increasingly respond to the husband's job loss is through husband's taking on part-time employment.

5. CONCLUSION

We reexamine the added worker effect, with a particular focus on the AWE across time. Using PSID data for the years 1968 to 2019, we compare changes in wives' labor supply following their husbands' displacement by decade and wife's age at the time of job loss. Although the literature has examined the evolution of the AWE across calendar time, no paper exists, to our knowledge, that leverages 52 years of data to examine broad based changes in female labor supply in response to a husband's involuntary employment separation from the 1970s to the 2000s. Doing so is important since this time period coincides with significant labor market changes for women. Increased labor demand for office workers, the creation of part-time work schedules, the elimination of marriage bars, and technological innovations in not only the office, but also the household led to large increases in female labor force participation.

Our results suggest that the AWE increased from the 1970s to the 1980s, which is consistent with Stephens (2002). The 1980s were a period of strong labor activity that favored sectors traditionally dominated by women (Plunkert, 2015). Women's relative wage began to increase, and women's labor force participation passed 50% for the first time in the 1980s (U.S. Bureau of Labor Statistics, 2024a; Blau and Kahn, 2007). The 1980s represents a decade of significant labor market progress for women. However, this strong labor market progress made it difficult, on average, for women to adjust their labor supply in response to spousal job loss in the 1990s and the 2000s. Generally, the AWE declined after the 1980s, which is a new finding. Although this contrasts with Juhn and Potter's (2007) and Mankart and Oikonomou's (2016) finding of an increasing AWE across time, their results represent a short-run AWE, whereas our analysis incorporates more post-displacement years and provides more of a long-run analysis.

Goldin and Mitchell (2017) highlight the importance of life-cycle considerations as an additional dimension of time in relation to changes in women's labor supply. Therefore, we extend the AWE literature to examine female labor supply changes in response to spousal job loss by the wife's age at the time of employment separation. We find that the AWE is mainly driven by women younger than 40 at the time of their husband's job loss.

Additional analyses by decade and age further emphasize the importance of life-cycle considerations. We find evidence of an added worker effect across all decades for wives under 40 at the time of their husband's job displacement, through either non-employed wives increasing their probability of employment or part-time wives increasing their probability of full-time employment. The AWE among younger workers, those in their 20s and 30s, still has a declining trend, but it is more persistent from the 1970s to 2000s in comparison to the overall AWE. In contrast, we find some evidence of an AWE among older women (40+) in the 1970s and 1980s,

particularly for those employed part-time pre-displacement, but there is no evidence of an AWE for older women in later decades.

Finally, we also show that displaced men are significantly more likely to work part-time following their own job displacement. While the AWE declines over both calendar time and the wife's age, displaced men's likelihood to work part-time increases across decades and the wife's age. By the 2000s, displaced men were over 12 percentage points less likely to be employed full-time and 9.6 percentage points more likely to be employed part-time after experiencing involuntary job loss. Similarly, displaced men with wives in their 50s at the time of job loss are 11.2 percentage points less likely to be employed full-time and 12.1 percentage points more likely to be employed part-time. The transition to part-time employment for displaced men highlights an additional avenue through which households adjust their labor supply following involuntary job loss.

In combination, these results suggest that familial insurance in response to this type of financial shock is limited and has been declining over time. This creates a larger role for public policy. If job losses are a natural result of competitive pressures, and if families are experiencing an increasingly difficult time self-insuring against this financial risk, then public resources can serve an increasing role through mechanisms such as increased job search assistance and unemployment insurance.

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TABLES AND FIGURES

Table 1: Descriptive Statistics (means and proportions) of Selected Variables by Displacement Status

	Non-Displaced	Displaced
Husband		
Annual Earnings	\$48,241	\$44,659
Age	32.85	30.53
Annual Hours Worked	2,090	2,048
Employed	95.66%	97.18%
Full Time	83.90%	82.53%
Part Time	11.76%	14.65%
Years of Education	13.17	12.55
Non-White	32.53%	35.89%
Wife		
Annual Earnings	\$25,934	\$21,878
Age	30.57	28.29
Annual Hours Worked	1,372	1,259
Employed	82.54%	80.04%
Full Time	54.32%	48.69%
Part Time	28.22%	31.35%
Years of Education	13.39	12.71
Non-White	30.72%	33.84%
Family		
Total Income	\$83,275	\$72,514
Number Children	1.01	1.24
# Couples	7,459	1,563

All calculations come from the first usable observation of each couple. All couples must have husband and wife present, between the ages of 20 and 60, with at least two observations. Displaced couples must have at least one observation prior to job loss, and the husband loses his job between the ages of 25 and 54. All dollar amounts are real, 2019 dollars.

Table 2: Number of Displacements over Time

Decade		# Displacements
	1970s	325
	1980s	579
	1990s	476
	2000s	318
Wife's Age at Displacement		
	20s	622
	30s	648
	40s	349
	50s	79
Summary statistics for the number of job displacements by decade and the wife's age at the time of displacement.		

Table 3: Husband's Labor Market Effects Associated with Displacement – TWFE

	(1)	(2)	(3)	(4)
	Log Earnings	Level Earnings	Annual Hours	Employment
After	-0.2501*** (0.0173)	-14,848.44*** (1,640.1599)	-162.46*** (18.3385)	-0.0129*** (0.0050)
R^2	0.09	0.05	0.05	0.05
N	84,846	90,343	90,343	90,343

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Outcome variables measure the husband's earnings (log and level), annual hours, and probability of employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 4: Husband's Labor Market Effects Associated with Displacement - Event History

	(1)	(2)	(3)	(4)
	Log Earnings	Level Earnings	Annual Hours	Employment
≤ t-10	0.0590* (0.0328)	7,422.4004*** (2,862.1504)	41.6882 (35.5445)	-0.0167** (0.0084)
t-9	0.0830*** (0.0294)	7,465.9532*** (2,144.6445)	91.8965** (37.5848)	-0.0101 (0.0071)
t-8	0.0826*** (0.0303)	8,452.1635*** (1,885.9294)	86.0918** (33.8542)	-0.0065 (0.0070)
t-7	0.0624** (0.0271)	6,276.4298*** (1,773.3648)	25.0551 (31.8540)	-0.0170*** (0.0065)
t-6	0.0730*** (0.0255)	6,641.4343*** (1,502.5211)	43.6253 (28.5762)	-0.0036 (0.0058)
t-5	0.0684*** (0.0234)	4,746.9066*** (1,512.2876)	80.2455*** (28.0006)	-0.0060 (0.0053)
t-4	0.0764*** (0.0216)	4,769.0634*** (1,250.3258)	87.4278*** (25.4538)	-0.0039 (0.0055)
t-3	0.0412** (0.0205)	3,544.7221*** (1,098.1151)	42.9195* (23.2218)	-0.0070 (0.0050)
t-2	0.0061 (0.0180)	1,293.4767 (946.3320)	14.1570 (20.2193)	-0.0032 (0.0049)
t = 0	-0.2127*** (0.0204)	-7,019.5738*** (790.6924)	-182.5835*** (20.4975)	0.0154*** (0.0042)
t+1	-0.3130*** (0.0257)	-12,256.0047*** (1,279.2828)	-250.3684*** (27.0307)	-0.0227*** (0.0067)
t+2	-0.2192*** (0.0238)	-10,968.6650*** (1,422.9232)	-144.5747*** (26.1213)	-0.0414*** (0.0072)
t+3	-0.1892*** (0.0253)	-10,559.4331*** (1,256.4338)	-81.9446*** (27.7839)	-0.0173** (0.0070)
t+4	-0.1659*** (0.0241)	-11,292.1842*** (1,531.4868)	-44.9738 (27.8182)	-0.0245*** (0.0071)
t+5	-0.2039*** (0.0344)	-11,390.6314*** (1,624.9461)	-27.5019 (30.0068)	-0.0168** (0.0078)
t+6	-0.1653*** (0.0272)	-10,955.1983*** (1,803.9067)	-72.1649** (28.9417)	-0.0257*** (0.0080)
t+7	-0.1749*** (0.0303)	-11,948.9923*** (2,178.2621)	-85.7390*** (33.1073)	-0.0290*** (0.0092)
t+8	-0.1667*** (0.0304)	-11,073.7978*** (2,515.2375)	-74.9731** (32.0794)	-0.0234*** (0.0090)
t+9	-0.2039*** (0.0327)	-14,559.5365*** (2,386.3464)	-95.6368*** (35.8909)	-0.0231** (0.0100)
≥ t+10	-0.2078*** (0.0296)	-16,500.3632*** (3,458.9937)	-94.5942*** (30.8778)	-0.0290*** (0.0090)
R ²	0.09	0.05	0.05	0.05
N	84,846	90,343	90,343	90,343

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Outcome variables measure the husband's earnings (log and level), annual hours, and probability of employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 5: Added Worker Effect – TWFE

	(1)	(2)	(3)	(4)
	Log Earnings	Level Earnings	Annual Hours	Employment
After	0.0263 (0.0270)	173.8038 (596.5062)	23.2492 (21.2030)	0.0037 (0.0101)
R^2	0.06	0.05	0.04	0.02
N	68,395	90,343	90,343	90,343

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Outcome variables measure the wife's earnings (log and level), annual hours, and probability of employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 6: Added Worker Effect - Event History

	(1)	(2)	(3)	(4)
	Log Earnings	Level Earnings	Annual Hours	Employment
≤ t-10	0.0706 (0.0664)	-675.8199 (1,463.0146)	12.8204 (47.0597)	0.0129 (0.0228)
t-9	0.0596 (0.0701)	-1,591.9925 (1,251.9713)	-16.5771 (46.0383)	-0.0215 (0.0250)
t-8	0.0669 (0.0580)	-772.3210 (1,097.9814)	20.6550 (38.0978)	-0.0107 (0.0208)
t-7	0.1015* (0.0568)	29.7378 (999.1221)	10.6234 (37.3078)	0.0013 (0.0197)
t-6	0.0847* (0.0501)	302.4960 (939.8836)	25.7358 (33.4605)	0.0018 (0.0174)
t-5	0.1085** (0.0541)	454.4979 (893.8217)	5.8337 (33.2834)	-0.0155 (0.0171)
t-4	0.0323 (0.0489)	-117.8431 (823.3799)	-1.6823 (28.3016)	-0.0045 (0.0146)
t-3	0.0811** (0.0408)	300.4459 (737.0208)	5.8781 (26.0259)	-0.0155 (0.0136)
t-2	0.0267 (0.0361)	49.0274 (808.5237)	7.7644 (19.9240)	-0.0036 (0.0107)
t = 0	0.0157 (0.0320)	-740.8991 (738.5775)	-13.2051 (18.9056)	-0.0058 (0.0099)
t+1	0.0184 (0.0393)	-791.1001 (824.1805)	3.7069 (24.6673)	-0.0162 (0.0127)
t+2	0.0643* (0.0378)	-251.5710 (746.5133)	12.8344 (25.0055)	-0.0074 (0.0131)
t+3	0.0616 (0.0427)	-127.1092 (784.6988)	28.4405 (28.1335)	0.0032 (0.0147)
t+4	0.0594 (0.0437)	757.3831 (857.4332)	44.2371 (27.8318)	0.0034 (0.0142)
t+5	0.0554 (0.0502)	-535.4321 (852.7960)	57.2500* (32.2026)	0.0122 (0.0159)
t+6	0.1289*** (0.0437)	545.8917 (964.9090)	60.7566* (31.0341)	0.0065 (0.0152)
t+7	0.1658*** (0.0467)	1,193.7181 (927.0824)	100.9479*** (33.2398)	0.0163 (0.0173)
t+8	0.1090** (0.0504)	402.2478 (1,015.9525)	47.2016 (33.9235)	0.0029 (0.0171)
t+9	0.1112** (0.0561)	1,308.5655 (1,071.7217)	72.5438* (38.6355)	0.0202 (0.0186)
≥ t+10	0.1850*** (0.0489)	1,737.1628 (1,207.5057)	54.1490 (37.2899)	0.0032 (0.0180)
R ²	0.06	0.05	0.04	0.02
N	68,395	90,343	90,343	90,343

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Outcome variables measure the wife's earnings (log and level), annual hours, and probability of employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 7: Added Worker Effect by Decade of Displacement

	(1) Log Earnings	(2) Level Earnings	(3) Annual Hours	(4) Employment
Panel A: Displacement in 1970s				
After	0.0494 (0.0683)	-288.0099 (919.5676)	8.0945 (44.6767)	-0.0144 (0.0248)
R^2	0.05	0.05	0.03	0.02
N	53,768	71,464	71,464	71,464
Panel B: Displacement in 1980s				
After	0.0439 (0.0457)	1,261.4932 (879.8560)	95.2286*** (35.5615)	0.0433** (0.0172)
R^2	0.06	0.05	0.04	0.02
N	56,816	74,882	74,882	74,882
Panel C: Displacement in 1990s				
After	0.0101 (0.0454)	-550.2174 (1,283.0629)	-40.2807 (38.3677)	-0.0255 (0.0171)
R^2	0.05	0.04	0.03	0.02
N	54,417	71,196	71,196	71,196
Panel D: Displacement in 2000s				
After	0.0368 (0.0612)	539.7710 (2,386.0259)	-19.2663 (50.4650)	-0.0270 (0.0209)
R^2	0.05	0.04	0.03	0.02
N	51,402	67,387	67,387	67,387

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. All calendar years are included in each regression. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 8: Added Worker Effect by Decade of Displacement

	(1)	(2)	(3)	(4)
<i>Wives' Employment Status Prior to Displacement</i>				
	Non-employed	Non-employed	Non-employed	Part-time
<i>Outcome Variable</i>				
	Employment	Part-time	Full-time	Full-time
Panel A. Displacement in 1970s				
After	0.1841*** (0.0419)	0.1356*** (0.0342)	0.0485* (0.0261)	0.1412*** (0.0395)
R ²	0.02	0.01	0.02	0.02
N	67,127	67,127	67,127	67,001
Panel B. Displacement in 1980s				
After	0.1887*** (0.0362)	0.1183*** (0.0289)	0.0705** (0.0319)	0.1629*** (0.0326)
R ²	0.02	0.01	0.02	0.02
N	67,462	67,462	67,462	67,981
Panel C. Displacement in 1990s				
After	0.1418** (0.0597)	0.0927 (0.0565)	0.0491 (0.0519)	0.0787** (0.0400)
R ²	0.02	0.01	0.02	0.02
N	65,919	65,919	65,919	66,529
Panel D. Displacement in 2000s				
After	0.0233 (0.0807)	0.0175 (0.0454)	0.0058 (0.0611)	0.1663** (0.0665)
R ²	0.02	0.01	0.02	0.02
N	65,242	65,242	65,242	65,449

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the decade of displacement and the wives' working status two periods prior to the husband's displacement: non-employed in columns (1) through (3) and part time in column (4). Outcome variables measure the wife's probability of employment, part-time employment, or full-time employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 9: Added Worker Effect by Wife's Age at Time of Displacement

	(1)	(2)	(3)	(4)
<i>Wives' Employment Status Prior to Displacement</i>				
	Non-employed	Non-employed	Non-employed	Part-time
<i>Outcome Variable</i>				
	Employment	Part-time	Full-time	Full-time
Panel A. Wives between 20 and 29 at Time of Displacement				
After	0.2506*** (0.0345)	0.1208*** (0.0310)	0.1297*** (0.0302)	0.2013*** (0.0354)
R^2	0.02	0.01	0.02	0.02
N	66,797	66,797	66,797	67,346
Panel B. Wives between 30 and 39 at Time of Displacement				
After	0.2197*** (0.0325)	0.1536*** (0.0265)	0.0660** (0.0298)	0.1041*** (0.0310)
R^2	0.03	0.01	0.02	0.02
N	67,431	67,431	67,431	67,793
Panel C. Wives between 40 and 49 at Time of Displacement				
After	0.0425 (0.0606)	0.0592 (0.0496)	-0.0167 (0.0446)	0.1299*** (0.0427)
R^2	0.02	0.01	0.02	0.02
N	66,406	66,406	66,406	66,568
Panel D. Wives at least 50 at Time of Displacement				
After	-0.0652** (0.0324)	-0.0440 (0.0397)	-0.0213 (0.0169)	0.1215 (0.1079)
R^2	0.02	0.01	0.02	0.02
N	65,116	65,116	65,116	65,253

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the wives' age at the time of displacement and working status two periods prior to the husband's displacement: non-employed in columns (1) through (3) and part time in column (4). Outcome variables measure the wife's probability of employment, part-time employment, or full-time employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 10: Added Worker Effect by Decade of Displacement, Wives Under Age 40 at Time of Displacement

	(1)	(2)	(3)	(4)
<i>Wives' Employment Status Prior to Displacement</i>				
	Non-employed	Non-employed	Non-employed	Part-time
<i>Outcome Variable</i>				
	Employment	Part-time	Full-time	Full-time
Panel A. Displacement in 1970s				
After	0.2336*** (0.0499)	0.1411*** (0.0408)	0.0925*** (0.0331)	0.1613*** (0.0506)
R^2	0.02	0.01	0.02	0.02
N	66,423	66,423	66,423	66,488
Panel B. Displacement in 1980s				
After	0.2329*** (0.0330)	0.1389*** (0.0281)	0.0940*** (0.0328)	0.1671*** (0.0354)
R^2	0.02	0.01	0.02	0.02
N	66,920	66,920	66,920	67,233
Panel C. Displacement in 1990s				
After	0.2475*** (0.0616)	0.1806*** (0.0540)	0.0669 (0.0602)	0.0612 (0.0426)
R^2	0.02	0.01	0.02	0.02
N	65,520	65,520	65,520	65,909
Panel D. Displacement in 2000s				
After	0.1476* (0.0840)	0.0659 (0.0542)	0.0817 (0.0732)	0.1694** (0.0782)
R^2	0.02	0.01	0.02	0.02
N	65,089	65,089	65,089	65,233

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the wives' age at time of displacement, under 40, and working status two periods prior to the husband's displacement: non-employed in columns (1) through (3) and part time in column (4). Outcome variables measure the wife's probability of employment, part-time employment, or full-time employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 11: Added Worker Effect by Decade of Displacement, Wives Age 40+ at Time of Displacement

	(1)	(2)	(3)	(4)
<i>Wives' Employment Status Prior to Displacement</i>				
	Non-employed	Non-employed	Non-employed	Part-time
<i>Outcome Variable</i>				
	Employment	Part-time	Full-time	Full-time
Panel A. Displacement in 1970s				
After	0.1092	0.1253**	-0.0161	0.0975*
	(0.0694)	(0.0569)	(0.0379)	(0.0552)
R ²	0.02	0.01	0.02	0.02
N	65,566	65,566	65,566	65,375
Panel B. Displacement in 1980s				
After	0.0342	0.0478	-0.0136	0.1532**
	(0.1073)	(0.0800)	(0.0832)	(0.0719)
R ²	0.02	0.01	0.02	0.02
N	65,404	65,404	65,404	65,610
Panel C. Displacement in 1990s				
After	-0.0683	-0.0811	0.0128	0.1069
	(0.1107)	(0.1140)	(0.0973)	(0.0777)
R ²	0.02	0.01	0.02	0.02
N	65,261	65,261	65,261	65,482
Panel D. Displacement in 2000s				
After	-0.2075	-0.0724	-0.1351	0.1639
	(0.1343)	(0.0687)	(0.0915)	(0.1195)
R ²	0.02	0.01	0.02	0.02
N	65,015	65,015	65,015	65,078

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the wives' age at time of displacement, 40+, and working status two periods prior to the husband's displacement: non-employed in columns (1) through (3) and part time in column (4). Outcome variables measure the wife's probability of employment, part-time employment, or full-time employment. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 12: Earnings and Income by Decade of Displacement

	(1)	(2)	(3)
	Husband Earnings	Wife Earnings	Family Income
Panel A. Displacement in 1970s			
After	-0.2249*** (0.0334)	0.0494 (0.0683)	-0.1365*** (0.0295)
R^2	0.10	0.05	0.07
N	66,971	53,768	71,464
Panel B. Displacement in 1980s			
After	-0.2778*** (0.0296)	0.0439 (0.0457)	-0.1603*** (0.0292)
R^2	0.10	0.06	0.07
N	70,350	56,816	74,882
Panel C. Displacement in 1990s			
After	-0.2159*** (0.0315)	0.0101 (0.0454)	-0.1077*** (0.0267)
R^2	0.10	0.05	0.07
N	66,825	54,417	71,196
Panel C. Displacement in 2000s			
After	-0.3016*** (0.0462)	0.0368 (0.0612)	-0.1971*** (0.0388)
R^2	0.10	0.05	0.07
N	63,145	51,402	67,387

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the decade of job displacement. Outcome variables measure the husband's earnings, wife's earnings, and family income (all in logs). Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 13: Earnings and Income by Wife's Age at Time of Displacement

	(1)	(2)	(3)
	Husband Earnings	Wife Earnings	Family Income
Panel A. Wife Between 20 and 29 at Time of Displacement			
After	-0.2406*** (0.0294)	0.0396 (0.0552)	-0.1291*** (0.0278)
R^2	0.10	0.05	0.07
N	68,767	55,795	73,230
Panel B. Wife Between 30 and 39 at Time of Displacement			
After	-0.2879*** (0.0291)	0.0429 (0.0397)	-0.1473*** (0.0239)
R^2	0.09	0.05	0.06
N	70,016	56,694	74,660
Panel C. Wife Between 40 and 49 at Time of Displacement			
After	-0.2225*** (0.0323)	0.0219 (0.0500)	-0.1521*** (0.0305)
R^2	0.10	0.05	0.07
N	66,492	53,707	70,916
Panel D. Wife 50+ at Time of Displacement			
After	-0.2188*** (0.0597)	-0.0204 (0.1141)	-0.1810* (0.1064)
R^2	0.11	0.05	0.07
N	62,016	50,207	66,123

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. The treatment group is restricted by the wife's age at the time of displacement. Outcome variables measure the husband's earnings, wife's earnings, and family income (all in logs). Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 14: Husband's Employment Outcomes by Decade of Displacement

	(1)	(2)	(3)
	Employment	Part Time	Full Time
Panel A. Displacement in 1970s			
After	-0.0089	0.0666***	-0.0755***
	(0.0110)	(0.0134)	(0.0168)
R^2	0.05	0.02	0.04
N	71,464	71,464	71,464
Panel B. Displacement in 1980s			
After	-0.0173**	0.0795***	-0.0968***
	(0.0080)	(0.0101)	(0.0135)
R^2	0.05	0.02	0.04
N	74,882	74,882	74,882
Panel C. Displacement in 1990s			
After	-0.0091	0.0503***	-0.0594***
	(0.0091)	(0.0121)	(0.0145)
R^2	0.05	0.02	0.04
N	71,196	71,196	71,196
Panel D. Displacement in 2000s			
After	-0.0250	0.0963***	-0.1212***
	(0.0162)	(0.0187)	(0.0227)
R^2	0.05	0.02	0.04
N	67,387	67,387	67,387

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Treatment group is restricted by decade of displacement. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 15: Husband's Employment Outcomes by Wife's Age at Time of Displacement

	(1) Employment	(2) Part Time	(3) Full Time
Panel A. Wife Between 20 and 29 at Time of Displacement			
After	-0.0131** (0.0057)	0.0578*** (0.0116)	-0.0709*** (0.0131)
R^2	0.05	0.01	0.04
N	73,230	73,230	73,230
Panel B. Wife Between 30 and 39 at Time of Displacement			
After	-0.0171** (0.0073)	0.0689*** (0.0098)	-0.0860*** (0.0120)
R^2	0.05	0.02	0.04
N	74,660	74,660	74,660
Panel C. Wife Between 40 and 49 at Time of Displacement			
After	-0.0161 (0.0127)	0.0734*** (0.0121)	-0.0895*** (0.0174)
R^2	0.05	0.02	0.05
N	70,916	70,916	70,916
Panel D. Wife Age 50+ at Time of Displacement			
After	0.0090 (0.0218)	0.1205*** (0.0305)	-0.1115*** (0.0379)
R^2	0.05	0.02	0.05
N	66,123	66,123	66,123

The sample includes opposite sex couples where both partners are between 20 and 60 years old. All couples must provide at least 2 usable observations. Displaced husbands must be in the sample at least one period before experiencing job loss and must be between 26 and 54 years old at time of separation. Treatment group is restricted by wife's age at time of displacement. Additional controls include a quartic in age, state dummy variables, calendar year dummy variables, and couple-specific fixed effects. Robust standard errors are in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

APPENDIX

Table A-1: Summary Statistics of Women's Working Status Prior to Displacement by Decade

	pre 1980s	1980s	1990s	2000s
Non-Employed	0.4047	0.2774	0.1613	0.1375
Employed	0.5953	0.7226	0.8387	0.8625
Part-Time	0.3602	0.3467	0.3085	0.2808
Full-Time	0.2351	0.3759	0.5301	0.5817
Observations	1,327	1,777	1,277	698

Note: Summary statistics by decade for the working status of wives prior to their husband's job loss.

Table A-2: Summary Statistics of Women's Working Status Prior to Displacement by Wife's Age at Time of Displacement

	20-29	30-39	40-49	50+
Not Employed	0.2444	0.2460	0.2500	0.3826
Employed	0.7556	0.7540	0.7500	0.6174
Employed Parttime	0.3723	0.3249	0.3028	0.2174
Employed Fulltime	0.3833	0.4291	0.4472	0.4000
Observations	1,821	1,890	984	115

Note: Summary statistics for the working status of wives prior to their husband's job loss by wife's age at time of displacement.

Table A-3: Women's Working Status Prior to Displacement by Decade and Wife's Age at Time of Displacement

	<u>pre 1980s</u>		<u>1980s</u>		<u>1990s</u>		<u>2000s</u>	
	< 40	40+	< 40	40+	< 40	40+	< 40	40+
Non-Employed	0.3484	0.5010	0.2849	0.2530	0.1556	0.1724	0.1713	0.0930
Employed	0.6516	0.4990	0.7151	0.7470	0.8444	0.8276	0.8287	0.9070
Part-Time	0.3842	0.3190	0.3385	0.3735	0.2981	0.3287	0.2897	0.2691
Full-Time	0.2673	0.1800	0.3767	0.3735	0.5463	0.4989	0.5390	0.6379
Observations	838	489	1,362	415	842	435	397	301

Note: Working status summary statistics prior to displacement by decade and wife's age at the time of displacement