

Welfare Reform and the Intergenerational Transmission of Dependence*

Robert Paul Hartley
School of Social Work
Columbia University

Carlos Lamarche
Department of Economics
University of Kentucky

James P. Ziliak
Center for Poverty Research and
Department of Economics
University of Kentucky

June 2021

Abstract

We investigate the effect of welfare reform on intergenerational welfare participation. We first present new descriptive evidence on intergenerational participation, using mother-daughter pairs in the Panel Study of Income Dynamics. We then estimate the effect of welfare reform on the intergenerational transmission of welfare participation, and related economic outcomes. Because states implemented welfare reform at different times starting in 1992, the cross-state variation over time permits us to quasi-experimentally separate out the effect of mothers' welfare participation on daughters' economic outcomes in adulthood in the pre- and post-welfare reform periods. We find that a mother's AFDC/TANF participation increased her daughter's odds of adult participation in that program by roughly 25 percentage points or more, but that welfare reform attenuated this transmission by at least 50 percent. However, there is no diminution of transmission after welfare reform when we consider the wider safety net or other outcomes. The findings suggest that daughters who grew up with mothers on AFDC/TANF were no better off in terms of economic outcomes and mobility after reform, with substitution toward other welfare programs over generations.

* Address correspondence to James P. Ziliak, University of Kentucky, Center for Poverty Research, Gatton Building Suite 234, 550 South Limestone St., Lexington, KY 40506-0034. Email: jziliak@uky.edu. We are grateful for comments from the editor, James Heckman, eight anonymous reviewers, Anna Aizer, Richard Blundell, Chris Bollinger, Paul Devereux, Steven Durlauf, Hilary Hoynes, Mike Keane, Henrik Kleven, Robert Moffitt, Bill Neilson, Lara Shore-Sheppard, Jeff Smith, Lowell Taylor, Genia Toma, Marianne Wannamaker, and participants at the 2015 Summer School on Socioeconomic Opportunity, 2016 NBER Summer Institute, 2016 Barcelona GSE Summer Forum, 2016 APPAM Conference, 2016 Tennessee Empirical Applied Microeconomics Festival, Columbia University, Institute for Fiscal Studies, Lancaster University, London School of Economics, Ohio State University, Nuffield College (Oxford), University College Dublin, University of Oklahoma, University of Oregon, and VATT Institute for Economic Policy. All errors are our own.

I. Introduction

A fundamental goal of the landmark 1996 welfare reform in the United States was to eliminate the dependence of needy families on government assistance. This was premised in part on the belief that dependence is passed down from parent to child through knowledge and values, creating a “culture of welfare” across generations (Murray, 1984; DeParle, 2004; Haskins, 2007). While this belief was bolstered by an empirical consensus documenting a positive intergenerational correlation of welfare use, the literature is much less settled on whether the relationship is causal (Duncan, Hill, and Hoffman, 1988; Solon et al., 1988; Gottschalk, 1992, 1996; Levine and Zimmerman, 1996; Pepper, 2000; Page, 2004; Dahl, Kostøl, and Mogstad, 2014). Instead, the parent-child link in welfare participation could simply be a spurious by-product of incomes that are correlated across generations, by which some persistence in welfare participation could be attributed to a poverty trap as opposed to a welfare trap. That is, low economic mobility across generations means that children of parents with low incomes likely have low incomes themselves in adulthood, and both generations participate in means-tested programs solely because of their shared poverty status and not welfare exposure per se. If true, then we would not expect generational welfare participation to fall after reform unless poverty among the young declined. Scores of papers have been written evaluating welfare reform (see surveys in Blank, 2002; Moffitt, 2003; Grogger and Karoly, 2005; Ziliak, 2016), but to date there has not been research on whether it achieved a key aim of ending generational welfare dependence. In this paper, we estimate the effect of welfare reform on the intergenerational transmission of welfare participation. In addition, because the goal of welfare reform was to reduce dependency more broadly, we also estimate whether reform changed the relationship between parental welfare use and other socioeconomic outcomes of the child in late adolescence and adulthood including human capital attainment, teen fertility, employment, marriage, and poverty status.

The Aid to Families with Dependent Children (AFDC) program was established as a federal-state partnership during the Great Depression to provide cash assistance to low-income families with dependent children. Most rules were federally set, and states had limited flexibility in designing the program beyond setting the maximum benefit guarantee and limits on income eligibility. Because of restrictions on eligibility of two-parent families for AFDC, over 90 percent of AFDC cases were single mother families. While the median spell length on AFDC was under a year, there was a sizable minority with multi-year spells (Moffitt, 1992), and a concern of some policymakers was that prolonged exposure of children to the program could lead them to choose single parenthood and reliance on the program in adulthood. Starting in the early 1990s, states began in earnest requesting waivers from federal rules on their AFDC programs to introduce work requirements, time limits on benefit receipt, and other changes. This reform momentum culminated with passage of the Personal Opportunity and Work Opportunity Reform Act (PRWORA) in 1996 that replaced AFDC with Temporary Assistance for Needy Families

(TANF), which unlike AFDC, is not an entitlement. While the TANF program features are now set primarily by the states, there are other assistance programs for low-income persons that remain under federal control; namely, the Supplemental Nutrition Assistance Program, known as SNAP or food stamps, which is the largest food assistance program in the U.S., and Supplemental Security Income (SSI), which is a disability assistance program with no work history requirement. This means that efforts by states to reduce participation in AFDC/TANF within and across generations may not be met with similar efforts on other programs under federal control. Indeed, while cross-sectional participation rates in TANF plummeted by two-thirds in the wake of welfare reform, there was a concurrent surge in participation in both SNAP and SSI (Schmidt and Sevak, 2004; Ziliak, 2015; Ganong and Liebman, 2018).

With this backdrop of changes in cross-sectional participation in welfare, we begin our analysis by documenting descriptive correlations over time in intergenerational income mobility and welfare participation using rolling cohorts of mother-daughter pairs over the survey period 1968-2013 in the Panel Study of Income Dynamics (PSID). We focus on mother-daughter pairs not only because single mothers make up the preponderance of cases on AFDC/TANF, but also because there has been a large secular increase since the 1960s in the fraction of first births to unmarried women in the U.S. such that more than one third of children were exposed to welfare by age 10 (Levine and Zimmerman, 2005; Cancian and Reed, 2009). The intergenerational correlations highlight that in the period prior to welfare reform, income mobility of daughters declined, while generational persistence in welfare use increased. However, after reform, there was a marked decline in the intergenerational correlation of AFDC/TANF, yet there was neither improvement in income mobility nor intergenerational welfare participation when welfare is more broadly defined to include food and disability assistance. To rule out the possibility that the decline in AFDC/TANF correlations are simply a mechanical by-product of falling cross-sectional participation, we further construct intergenerational correlations of welfare participation by using mother-daughter pairs who are observed either entirely before reform or after. The evidence indicates a substantial decline in the intergenerational correlation of AFDC/TANF use in the post-reform period, suggesting the post-reform decline is not a purely mechanical artifact. Notably, though, when we consider the broader measure of welfare that includes SNAP and SSI, we find that the intergenerational correlation remains unchanged after reform.

We then develop an empirical framework that builds on a canonical Becker-Tomes (1979, 1986) transmission model in order to identify whether welfare exposure causally determines participation in adulthood. Specifically, we employ a difference-in-difference-type specification whereby the economic outcome of the daughter during adulthood is regressed on the prior welfare participation of the mother, a variable reflecting the implementation of welfare reform in the mother's state, and the interaction of the welfare-reform variable with mother's participation. Our identification strategy exploits the quasi-

experimental variation provided by the 1990s reforms to the AFDC program. However, even though welfare reform provides exogenous variation in access to program benefits across welfare eras, identifying whether there is an effect from parent to child in welfare use *within* periods is complicated by two—potentially reinforcing—forms of bias. First, selection bias in welfare participation across generations can arise through unobserved correlations in labor market productivity between the parent and child, perhaps because of latent shared cognitive or noncognitive ability or a lack of human capital investment across generations (Solon et al., 1988; Gottschalk, 1992, 1996; Pepper, 2000). The second threat to identification comes from potential misclassification bias in survey responses (Bollinger and David, 1997; Kreider et al., 2012; Meyer and Mittag, 2017). In transfer programs, this nonclassical measurement error mostly comes in the form of “false negatives” when the respondent states they did not participate in a program when in fact they did. Meyer, Mok, and Sullivan (2015a,b) document a trend increase in misreporting across all major household income surveys in the U.S.

In our empirical model, we address potential endogenous selection into welfare by instrumenting for mother’s welfare use with measures of the state maximum AFDC/TANF benefit standard when daughters are ages 12 to 18. The instruments are constructed during a daughter’s critical ages of exposure to her mother’s potential welfare, which is generally well before she faces a participation decision as an adult. The mother’s welfare participation decision is assumed to respond positively to greater state-level AFDC/TANF benefit standards. Fundamentally, this aggregate measure of state-level policies identifies the portion of a mother’s participation decision that is related to her welfare status separately from conditions related to her poverty status, and consequently, her daughter’s future poverty status. Next, we address the implications of misclassified welfare participation, which may occur in both the dependent variable for daughters as well as the independent variable for mothers. We use a relatively long history to determine whether the mother participated in welfare in the past, and we address misclassification bias in the dependent variable by parametric methods using extra-sample information based on PSID reporting rates estimated in Meyer et al. (2015b).

Our estimates show that there is strong evidence for transmission of AFDC/TANF participation from mother to daughter, and it is economically sizable, on the order of at least 25 percentage points. However, welfare reform significantly attenuated the level of transmission pathway by at least 50 percent. The implication is that of the two-thirds reduction in the cross-sectional rate of participation in AFDC/TANF after reform, at least half of that amount comes from reduced generational transmission. While we also find that exposure to AFDC/TANF substantively increased the use of the wider safety net in adulthood, welfare reform did not affect intergenerational welfare use more generally; that is, daughters who grew up on welfare did not leave assistance after reform as they substituted AFDC/TANF with other welfare programs in the wider safety net. Moreover, we find that exposure to AFDC/TANF increased the

risk of teen birth and lower levels of human capital attainment, employment, and income, but welfare reform did not diminish those generational links, leaving daughters no better off in broader economic status. We find that these results are robust across a variety of specifications, including a generalization of the model to examine the possibility of pre-existing confounders or latent state-specific trends. While we are not able to provide definite conclusions on the possible mechanisms for the main findings, our results are consistent with a model of word-of-mouth transmission from mother to daughter pointing to the costs of participation in TANF outweighing the benefits.

II. Welfare Reform

Welfare in the U.S. through the 1980s was largely defined by the AFDC program, which was established as part of the Social Security Act of 1935 to assist low-income families with children under age 18. Eligibility for assistance was determined by an income test, a liquid asset test, and a vehicle asset test. The program was financed by a federal-state matching grant program, and states had limited authority on program design, such as setting benefit standards (maximum benefit levels increasing with family size) and need standards used in assigning income eligibility. Beginning in the 1960s, states could apply for waivers from federal rules to experiment with program features. Several states filed waiver applications under President George H.W. Bush's administration, which accelerated under the Clinton administration, so that 43 states had waivers by 1996 (Grogger and Karoly, 2005). The waivers were far reaching, including both strengthening and expanding of pre-existing policies (e.g., work requirements and sanctions on benefits for failing to work or participate in a training program), as well as new policies aimed at family responsibility (e.g., caps on the generosity of benefits by family size and time limits on benefit receipt). Some of the new policies actually expanded eligibility, such as higher asset limits and earnings disregards for benefit determination, but the majority were designed to restrict program access. Time-limit waivers, in particular, were introduced to break long-term spells on AFDC, and in turn to reduce exposure of children to parental use of welfare. These waivers were codified into federal law with passage of PRWORA in 1996 that replaced AFDC with TANF. Unlike AFDC, TANF is funded by a fixed block grant to states and eligibility is not an entitlement. Consequently, states were granted much greater authority in program design and there are vast differences across states in TANF policy.

[Figure 1 here]

Figure 1 depicts trends in the number of persons on AFDC/TANF, spanning the AFDC (1960-1991), waiver (1992-1996 shaded in gray), and TANF (from 1997 onward) eras. Participation accelerated throughout the 1960s from about 3 million persons in 1960 to 10 million a decade later. The level of recipients remained stable for nearly two decades, and then increased approximately 30 percent from 1989 to 1994. By 2012, however, the number of recipients had plummeted 67 percent to levels akin to five decades earlier. Numerous studies demonstrated that while the economy accounted for more of the

decline in welfare in the mid-1990s, waivers also reduced participation, especially in those states adopting more stringent responsibility and time limit policies (Ziliak et al., 2000; Grogger, 2003).

Families that received AFDC were categorically eligible for food assistance from the Food Stamp Program, which was renamed SNAP in 2008. Receipt of AFDC was not necessary for eligibility for food stamps, but it was sufficient, and typically about 80 to 90 percent of AFDC recipients took up both. This categorical eligibility remained after the introduction of TANF for those receiving cash assistance. While any given individual on AFDC could not simultaneously receive assistance from the SSI disability program, which began in 1972, families could possibly combine benefits with some members on AFDC and some on SSI (and still also qualify for food stamps). These provisions remain after welfare reform.

Figure 1 also presents trends in the number of recipients on SNAP and SSI. There was a marked drop in SNAP participation in the immediate aftermath of welfare reform, followed by a huge expansion in the subsequent decade, reflecting changes in the macroeconomy, SNAP policies, and take-up rates among those eligible (Ziliak, 2015; Ganong and Liebman, 2018). There was also growth in SSI, notably after the Supreme Court's *Zebley Decision* expanded eligibility for children (Kubik, 1999), and again after welfare reform where some states systematically facilitated the applications of AFDC recipients for SSI program benefits (Schmidt and Sevak, 2004). The implication is that even if welfare reform succeeded in breaking the generational cycle on AFDC/TANF, it is not clear a priori that it improved self-sufficiency or reduced dependence more broadly when additional safety net programs are considered.

These policy changes led to a bevy of research on the effects of the reform on maternal welfare participation, employment, consumption, saving, health, and family structure, as well as child well-being (Blank, 2002; Moffitt, 2003; Grogger and Karoly, 2005; Ziliak, 2016). In surveying that literature two decades later, Ziliak (2016) concluded that welfare reform contributed significantly to the reduction in participation in the TANF program and an increase in employment and earnings among single mothers. However, total after-tax and transfer incomes fell in the bottom half of the income distribution of single mothers; that is, higher earnings were offset by reductions in transfer income, leaving some mothers worse off financially. Ziliak argued that the evidence on other domains of family life, including child well-being, was too scant to draw meaningful conclusions. Importantly, most of this research occurred within five years after passage of PRWORA, and almost all in the first decade. One conjecture for the null effects on young children is that reform may take more time to manifest in child outcomes, perhaps by daughter's exposure to mother's longer attachment to the workforce or by word-of-mouth transmission from mother to daughter on the costs and benefits of various transfer programs (Edin and Lein, 1997; Halpern-Meehan et al., 2015). Whether and to what extent these developments altered the trajectories of daughters in adulthood is the focus of the ensuing sections.

III. Intergenerational Correlations: Cross-Sectional Evidence

We begin our analysis by presenting cross-sectional evidence on intergenerational correlations of income and welfare participation among mothers and daughters. These correlations are of independent interest as much of the literature has either focused on the mobility of sons, has daughter estimates that mostly pre-date welfare reform, or in the case of some of the recent literature, relies primarily on tax data and thus does not capture welfare income because it is generally not taxable (Solon, 1992, 1999; Mazumder, 2005; Black and Devereaux, 2011; Lee and Solon, 2009; Chetty et al., 2017). To estimate the correlations, we use data from the PSID, which was begun in 1968 as a survey of 4,800 American families and has followed the children and grandchildren of original sample parents as they split off to form their own households so that today there are over 10,000 PSID families and 24,000 individuals. As the longest continuously running longitudinal survey, the PSID is ideally suited for the study of intergenerational transmission. The original sample drew about 60 percent of the families from the nationally representative Survey Research Center (SRC) sample, and the other 40 percent from an oversample of low-income and minority families as part of the Survey of Economic Opportunity (SEO). We focus on linked mother-daughter pairs over the entire life of the PSID survey years from 1968 to 2013, and in order to ensure adequate sample sizes, we include observations from both the SRC and SEO subsamples. Therefore, we provide weighted estimates in all of our estimation results to account for the over-sampling of low-income families.¹ The online supplement offers a detailed description of the data.

A. Trends in Intergenerational Economic Status

We initially estimate a series of cross-sectional regressions over time using rolling cohorts of mother-daughter pairs from the PSID similar to that used by Page (2004). Specifically, we adopt a framework akin to that employed in the literature on intergenerational income mobility (Solon, 1999; Black and Devereaux, 2011) such that, in each year, we estimate bivariate regressions of the form

$$(1) \quad y_i^d = \zeta + \rho y_i^m + v_i^d,$$

where i represents the mother-daughter pair, y_i^d is the outcome of the daughter d measured in her adulthood, y_i^m is the corresponding variable of the mother m measured in the daughter's childhood, ρ is the correlation coefficient between mother and daughter, and v_i^d is the daughter's error term. Higher values of the correlation coefficient imply stronger bonds in mother-daughter outcomes, and thus less mobility across generations. For the first outcome, we focus on income, defined alternatively as: (1) whether the mother-daughter pair have incomes that place them in poverty as measured by a family income-to-needs ratio less than 1, where needs are defined by the official poverty threshold that varies by

¹ We use the daughter's current core longitudinal weight, though the online supplement shows results that are robust to the use of the mother's weight defined over different time periods, as well as to unweighted regression or to using exclusively the SRC subsample (see the online supplement).

family size; (2) low-income status, defined as family income-to-needs less than 2; and, (3) the logarithm of family income. We select the poverty-based measures because they represent the part of the income distribution with the highest chances of welfare use, while log income gives standard estimates of intergenerational elasticities. For each mother-daughter pair, we take the average of annual income-to-needs across the daughter's adult years from the age of 19 through age 27, while the mother's income-to-needs is averaged across all years before the daughter forms her own family unit.² The dependent and independent poverty-status variables are dichotomized to equal 1 if any of the average poverty conditions are met, and 0 otherwise. The third outcome measures income continuously as the log of average family income for the respective daughters' and mothers' observation windows.

[Figure 2 here]

Figure 2A presents estimates of the income correlation coefficients starting in 1978, the first year with enough daughters to estimate the correlations. The figure shows that in the two decades from the late 1970s to 2000, the income mobility of daughters declined substantially across all three measures. For example, in the log-log model the elasticity of a daughter's income with respect to her mother's income more than doubled from 0.22 in 1980 to 0.55 in 2000. Over the same period, the odds of a daughter having income under twice the poverty line if her mother also had similarly low income went from about 0.20 to 0.40. Since 2000, the income correlations stabilized, suggesting no further decline in mobility.

Given the strong intergenerational association in incomes between mothers and daughters, we next examine whether that coincides with a strong correlation in welfare participation. Figure 2B uses the same sample as in Figure 2A, but now the correlation coefficient is obtained considering alternatively whether the daughter and mother participated in AFDC/TANF at any time during their respective observation windows, or considering the daughter's average participation rate relative to any exposure from maternal participation. The figure shows that the intergenerational correlation for any participation in AFDC increased throughout the two decades leading up to the passage of welfare reform, and did not peak until the late 1990s when the correlation of 0.37 was about double that of the late 1970s. The correlation between mothers' and daughters' AFDC/TANF use then fell precipitously afterwards to levels comparable to those in the early 1980s. The patterns are similar for a daughter's average welfare participation in adulthood. However, expanding the definition of daughter's welfare to include SNAP or SSI in addition to AFDC/TANF (mother's welfare remains defined by AFDC/TANF use), then we see a very different pattern. The intergenerational correlations for broader welfare participation are relatively constant after welfare reform much like we saw with incomes. These trends are suggestive that daughter's

² In order to ensure adequate sample sizes, the daughters' outcomes between ages 19-27 are measured retrospectively among all daughters who are ages 27 and 42. The daughters who formed their own family unit may be single or married, and thus income contains their own income and that of a spouse if present.

overall economic status, whether defined by income status or broad welfare participation, are closely tied to her mother's and did not improve after welfare reform.

B. Regression-Adjusted Intergenerational Welfare Correlations Before and After Reform

The correlations in Figure 2 have mother-daughter pairs crossing the pre- and post-welfare reform regimes (with several mothers participating before reform and daughters participating after), thus potentially confounding a mechanical effect of changing program access over generations and the behavioral effect of changing transmission after reform. Moreover, those correlations do not control for any covariates that influence a daughter's decision to participate in welfare as found in the standard welfare participation literature (Moffitt, 1992; Ziliak et al., 2000; Grogger, 2003; Bitler and Hoynes, 2016). To attempt to rule out the possibility that the mechanical effect of the reform is the primary driver of the declining AFDC/TANF correlation, and to control for potential confounders in the daughter's participation decision, we estimate the intergenerational correlation by constructing a sample of mother-daughter pairs who are observed solely in one welfare regime or the other. Presumably, if the within-regime mother-daughter correlation is the same before and after reform, then the decline in AFDC/TANF participation in Figure 2B likely captures changes in the baseline probability of welfare participation.

Let r indicate whether the mother-daughter pair i in state s is observed pre-reform or post-reform, the timing of which is determined by the earliest date that the daughter's or mother's state either implements a welfare waiver during the period 1992-1996, or TANF in 1997. Rather than estimating the correlation by year as in equation (1), we now estimate the correlation coefficient by regime r as follows:

$$(2) \quad y_{isr}^d = \alpha_r + \delta_r y_{isr}^m + \beta_r' x_{isr}^d + \mu_{sr}^m + \mu_{sr}^d + v_{isr}^d,$$

where y_{isr}^d measures daughter's welfare participation during regime r ; y_{isr}^m measures mother's participation during regime r ; x_{isr}^d is a vector of control variables that includes exogenous demographic characteristics of the daughter, as well as state-level policy and labor-market variables in the daughter's state of residence; and, v_{isr}^d is the error term.³ The state effects μ_{sr}^m and μ_{sr}^d control for permanent differences in mother's and daughter's states such as policy environments and natural endowments that affect economic opportunities.⁴

[Table 1 here]

As a starting point for our investigation, in Table 1 we present estimates of the regime-specific

³ The control variables are individual averages of mother's age, quadratics in mother's age, and state-level controls for the daughter's AFDC/TANF benefit standard, maximum federal/state EITC, poverty rate, unemployment rate, and AFDC/TANF reciprocity rate. Our dates for the implementation of welfare reform are based on Crouse (1999).

⁴ Mother's state effect is based on the modal state where the mother resided when the daughter was aged 12-18. If mothers and daughters always co-reside in the same state, then it is not possible to separately identify the mother and daughter state fixed effects.

intergenerational correlation coefficient, δ_r , estimated from eight variants of equation (2). The first four columns are for daughter's AFDC/TANF participation and the last four columns are for AFDC/TANF, SNAP or SSI participation. For these welfare program outcomes, we consider a daughter's average welfare participation during ages 19-27. In order to compare welfare exposure in childhood to ongoing dependence in adulthood, the average participation measure provides a more meaningful interpretation for the parameter of interest.⁵ We measure the mother's AFDC/TANF participation as an indicator for any welfare exposure when the daughter is between the ages of 12-18, the typical age for measuring exposure in the literature. For the pre-reform regime, we use only daughter observations before she or her mother experienced welfare reform, and for the post-reform regime, we use daughters whose entire critical exposure period from age 12 onward is after reform.⁶ In columns (3)-(4) and (7)-(8) we also present results of a version that puts the same weight on bigger and smaller families, which is achieved by weighting inversely by the number of daughters for a given mother.

In the first two columns of Table 1, the estimate of the correlation of mother's AFDC participation is 0.210 before the reform, and 0.078 after.⁷ These results suggest that if the daughter's mother participated in AFDC, then the daughter is 21 percentage points more likely to participate before the reform, but only about 8 percentage points more likely after reform. For the AFDC/TANF models, there is clear evidence of a decline in the intergenerational correlation in the post-welfare reform period. The effect of the reform implies a reduction of about 0.13 points in the correlation coefficient, or a 63 percent reduction in levels, both of which are significantly different from zero at standard levels of significance. We also see that the change of the correlation coefficient is similar when we compare results that weight differentially by number of daughters. On the other hand, when we expand the definition of welfare to include food and disability assistance, the correlations remain unchanged by welfare regime.

[Figure 3 here]

Figure 3 presents robustness checks on the estimates from Table 1 by considering 64 different variations of equation (2), defined for participation in AFDC/TANF and in the broader safety net. The figure presents point estimates and their associated 95-percent confidence intervals. In panel A, we

⁵ Note that the trends in Figure 2B follow similar patterns for daughter's welfare defined as any participation compared to average participation. Reform might be expected to have smaller effects on a daughter's extensive margin welfare participation decision over a period of time relative to intensive margin decisions from year to year.

⁶ Moreover, we employ roughly 15 years of data within each regime. Since welfare reform was complete by 1997 (full-year implementation by 1998) and our data continue through 2012, the before-reform regime observations starts in 1985.

⁷ In these samples within welfare regime, identification relies on 274 mothers who participated in welfare in the before period out of 867 mothers total, and 66 out of 401 mothers who participated in the after period. Because the sample includes siblings, the corresponding numbers of daughters are 397 whose mothers participated in AFDC out of 1254 daughters pre-reform, and 83 daughters whose mothers participated in TANF out of 476 post-reform.

measure welfare participation as the average participation during a daughter’s observation window, and in panel B, we measure welfare participation as an indicator variable for whether the daughter participated in welfare at any time during her observation window. Within each panel, we make samples comparable in age distributions and estimate equation (2) considering the same observation window for all mothers and daughters. We restrict the samples of daughters to ages 19-27, which is consistent with estimates shown in Table 1 and Figure 2. In order to clearly distinguish between generations, we show results defining the daughter’s critical welfare exposure years at home alternatively as ages 12-18 and 12-16; however, all of our welfare participation definitions throughout distinguish teenage parents living at home from potential first-generation welfare receipt. Finally, the last 16 variants of the model in each panel present results that reweight the sample based on the number of daughters for a given mother.

Figure 3 provides a clear visual description of the changes in the intergenerational correlation of welfare participation after reform. Consistent with the results in Table 1 and Figure 2B, we see a decline in the intergenerational correlation in AFDC/TANF, and this finding is robust to using alternative welfare definitions (average or any), observations windows of daughter critical ages (12-16 or 12-18), and weighting schemes (sample weights alone or adjusted inversely by number of daughters). The results are not significantly affected by the critical exposure window, which might not be surprising since our definition considers a daughter as an adult at first childbirth or when establishing a new family unit if she is at least age 14. Moreover, we continue to uncover a different pattern when we augment the definition of daughter’s welfare to include SNAP or SSI in addition to AFDC/TANF.

While Table 1 and Figure 3 present descriptive correlations only, they do provide suggestive evidence that the decline in the intergenerational correlation in AFDC/TANF is not solely a mechanical artifact of falling cross-sectional participation. On the other hand, we cannot rule out that the decline of the intergenerational correlation in AFDC/TANF could be associated with changes in the characteristics of families after reform. For instance, the average mother who participates in welfare has fewer children and is more educated after reform, suggesting that mothers who participated before and after the reform could share different backgrounds and experiences (see Table S.1-3 in the online supplement). It is clear, however, that these changes are part of a secular trend, as mothers who did not participate in welfare in the period after also have fewer children and have higher educational attainment.⁸

[Table 2 here]

A way to evaluate whether these changes in the composition of families affect the correlations in Table 1 is to estimate equation (2) for different subsets of mother-daughter pairs who share similar educational attainment and family income before and after the reform. Table 2 presents intergenerational

⁸ In the online supplement, we show that nonparticipants made bigger improvements in educational attainment than participants.

correlations similar to Table 1, but now we compare results for daughters with mothers who have high school education or less (panel A) or any prior income below 100 percent of poverty (panel B). Following Table 1, we show results for mother's participation during the daughter's critical exposure period of 12-18 years of age, with and without weights to accommodate different family sizes. Interestingly, we observe in columns (1) and (2) of Table 2 larger changes after reform for a daughter whose mother had a high school education or less relative to the after-reform estimates in Table 1. Qualitatively, we also observe a decline in participation in the broader safety net, although the changes are statistically insignificant. When results are obtained by considering a low-income subsample of mothers instead of the lower-education sample, the intergenerational correlation coefficient estimates are smaller pre-reform and larger post-reform, yet the percent change in AFDC/TANF is still over 50 percent.

[Table 3 here]

An important takeaway from the cross-sectional evidence is that AFDC/TANF intergenerational correlations decreased after reform, while SNAP and SSI did not, but this decline in AFDC/TANF generational ties is not mainly associated with changes in the baseline participation or changes in the composition of families after reform. The result, however, can be interpreted in connection to a previous literature that has focused on program substitution in the post-reform era (see, e.g., Garrett and Glied, 2000; Schmidt and Sevak, 2004), although our analysis differs from these studies since we examine intergenerational outcomes. If welfare use did not improve the economic well-being of daughters who grew up on welfare, as Figure 2 seems to suggest, it is natural to expect that daughters switched programs and remained on assistance after reform. Using the sample in Table 1, we examine this hypothesis by presenting the distribution of daughters participating in different welfare programs in Table 3, which compares estimates by mothers' AFDC/TANF participation pre- and post-reform as well as by daughters' educational attainment. While the analysis in Table 3 does not identify mechanisms, several interesting findings emerge: (i) welfare use overall increases after reform (as shown in column (8)); (ii) about 6 percent of daughters who did not grow up on welfare participate in only SNAP or SSI before the reform, while this proportion increases to roughly 22 percent after reform (columns (1) and (2)); (iii) among daughters whose mothers participated in AFDC/TANF, over 35 percent of the increase in SNAP or SSI participation is associated with the reduction of AFDC/TANF participation after reform; and (iv) daughters who grew up on AFDC/TANF and have high school education or less participate much more in the wider safety net while more-educated daughters also increase SNAP or SSI participation largely by substituting programs over generations. Evidence of program substitution shown in Table 3 corresponds to findings in the careful qualitative studies of welfare by Edin and Lein (1997), DeParle (2004), and Halpern-Meekin et al. (2015) that suggest that mothers could inform their adult daughters that certain program benefits are no longer worth the cost of participation (e.g., TANF) while others are (e.g., SNAP).

Although the evidence suggests clear changes in the intergenerational correlation of AFDC/TANF participation, we remain cautious about interpreting causal welfare transmission effects for several reasons. The within-regime, cross-sectional approach ignores selection bias, that is, the possibility that welfare participation of daughters and mothers are determined by common latent factors associated with persistence of income levels across generations. This endogenous selection can affect both the magnitude of the correlation and the interpretation of whether it reflects a poverty trap or welfare trap. Moreover, the models estimated in Tables 1 and 2 do not directly accommodate non-random misclassification of mother's and daughter's welfare participation, which is a threat to identification that is fundamentally different from traditional measurement error. Another limitation of estimating equation (2) as in Tables 1 and 2 is that it is difficult to control for year effects, which is of fundamental importance given the significant decrease after reform in the probability of participating in AFDC/TANF. Lastly, the aggregation of variables creates additional challenges on inference, including addressing the possibility of clusters. We simultaneously address these issues in the next section by exploiting the panel aspect of the PSID and using repeated observations for daughters.

IV. Identifying Intergenerational Welfare Transmission Pre- and Post-Reform

The framework we employ to causally identify welfare transmission across generations is the dynastic family decision-making model of Becker and Tomes (1979, 1986). In this model, the parent has weighted altruistic preferences over the income of their child along with their own consumption, and allocates lifetime resources toward own consumption and investment in the child. The child's human capital investment likely involves development of both cognitive and noncognitive skills, each of which can influence poverty and welfare status in the next generation (Heckman, Stixrud, and Urzua, 2006). With standard assumptions on the human capital technology, the canonical statistical model involves regressing the outcome of interest of the child on the corresponding outcome of the parent, similar to equations (1) and (2). This model has been used in scores of papers on intergenerational transmission of economic status, whether it is earnings, education, health, income, wealth, or in our case, welfare participation (see Black and Devereux, 2011).

The preliminary evidence presented in Section III suggests a structural break in AFDC/TANF participation starting during the waiver era. This implies a modification to equation (2) for the two regimes in that we now allow for multiple observations per daughter as follows:

$$(3) \quad y_{ist}^d = \alpha + \delta y_{is, \forall j < t}^m + \gamma R_{st}^m + \theta R_{st}^m y_{is, \forall j < t}^m + \beta' \mathbf{x}_{ist}^d + \mu_s^m + \mu_s^d + \kappa_t^d + v_{ist}^d,$$

where y_{ist}^d is a variable that indicates whether the daughter participates in welfare in adult year t , $\mathbf{x}_{ist}^d$ is a vector of control variables, μ_s^m and μ_s^d are state fixed effects, κ_t^d are year fixed effects to control for common shocks that affect all daughters in a given year, and v_{ist}^d is the error term. The generalization of equation (2) presented in equation (3) includes two distinct features. Consistent with a difference-in-

difference type framework, we include R_{st}^m as an indicator variable that takes a value of 1 when the state of residence of the mother implements welfare reform, and 0 otherwise. This introduces an intercept shift in the daughter's welfare participation after reform. Moreover, we define mother's participation as $y_{is,\forall j < t}^m$, indicating whether the mother participates in welfare during daughter's childhood or in any prior period $j = 1, \dots, t - 1$ during daughter's adulthood. Naturally, for many families, $y_{is,\forall j < t}^m$ is determined by mother's participation during daughter's childhood, as in equation (2). However, now we allow that mothers might influence adult daughters beyond childhood. This important change accommodates the situation where the mother joins welfare after the daughter becomes an adult because of younger children present in the family, and thus, allows for verbal transmission of program-specific information between mother and adult daughter. Once the mother participates, the $y_{is,\forall j < t}^m$ variable remains on for each subsequent observation. The use of any prior welfare for the mother serves two purposes: first, it implies that once the mother participates in welfare it cannot be "unlearned" by the daughter; and second, the any-prior measure captures a longer window and thus attenuates potential measurement error.

In equation (3), δ is the intergenerational effect of the mother's AFDC/TANF participation, and $\delta + \theta$ is the effect after welfare reform. This specification is akin to a difference-in-difference model whereby we exploit the quasi-experimental variation induced by the fact that different states adopted welfare reform at different times starting in the early 1990s.⁹ That is, the indicator R_{st}^m turns on when state s implements a waiver and remains on thereafter. By adopting this functional form, we implicitly assume that the TANF program implemented after PRWORA is a continuation of the reforms begun during the waiver period for those states that were early adopters of reform.¹⁰ If welfare reform succeeded in reducing AFDC/TANF transmission across generations, then we expect that $\theta < 0$. We next discuss two key threats to identification of the transmission parameters.

A. Selection Bias

The quasi-experimental design of using cross-state variation over time in adoption of welfare reform permits us to separate the pre- and post-reform eras, but within the AFDC and TANF eras there still remains a possible convolution of whether transmission reflects a poverty trap or a welfare trap. In the Becker-Tomes framework, a poverty trap can arise if the mother is endowed with low human capital, which translates into weak labor force attachment and her poverty status limits opportunities to invest in

⁹ Ziliak et al. (2000) show that a state's decision to apply for an AFDC waiver was not an endogenous response to caseload size, which supports the use of the waiver reform period as identifying variation for welfare participation. See online supplement Section S.6 for further evidence, which includes robustness to the definition of reform timing (Table S.6-4), correlations of time-varying state policies and reform timing (Table S.6-5), or the randomness of trends around the timing of reform (Table S.6-6).

¹⁰ This has been a standard assumption in the welfare reform literature, though in some cases researchers allow a trend break between the waiver era and TANF era (Blank, 2002). When we include additional controls for welfare reform characteristics in the baseline specification, our transmission estimates are qualitatively unaffected.

her daughter's human capital. This low investment in human capital then perpetuates the cycle of poverty and need for assistance. Alternatively, a welfare trap can arise if the mother's welfare receipt directly affects the daughter's human capital (inclusive of program knowledge or social norms), and thus the daughter's take-up of assistance becomes a welfare dependence trap across generations (e.g., Lindbeck, Nyberg, and Weibull, 1999; Durlauf and Shaorshadze, 2014). There have been several efforts over the years to control for endogenous selection in intergenerational welfare participation. Solon et al. (1988) used pairs of sisters in order to control for shared family background, Antel (1992) adopted a version of Heckman's (1978) selection model, and Levine and Zimmerman (1996) used state welfare generosity and county unemployment rate variables as instruments for mother's welfare participation. Gottschalk (1996) addressed unobserved heterogeneity by modeling the event histories of daughters' and mothers' welfare use, and Dahl et al. (2014) used the random assignment of appellate-court judges as an instrumental variable to identify parent's disability participation on child's disability insurance claims.

Our approach to address possible endogenous selection within welfare regimes is to extend the prior point identification literature by exploiting variation in state benefit generosity across mother-daughter pairs during the critical exposure years. Specifically, we instrument for mother's welfare participation using the policy parameter defined by the state AFDC/TANF benefit standard, or maximum benefit guarantee. The AFDC/TANF benefit standard is set by state legislatures and varies across states, time, and family size. This policy variation speaks to the prospect of the welfare trap, since a higher AFDC/TANF benefit standard means that, all else equal, welfare is more attractive to the mother. To ensure that the policy instruments are most salient to the mother's welfare choice, we restrict the time period of the instruments by aggregating over values applicable to the mother when her daughter is in the critical exposure ages of 12-18 years old and not yet an independent adult. Note that because the models are estimated with the mother's modal state effects and daughter's state and year effects, as well as controls for the daughter's contemporaneous benefit policies, these instruments are demeaned variables by state and time, and therefore, they exploit exogenous transitory policy changes at the state level during a daughter's childhood.¹¹ These welfare policies while the daughter is young should have no effect on her subsequent welfare decisions in adulthood except via the welfare choice of her mother (Antel, 1992; Moffitt, 1992; Levine and Zimmerman, 1996).

We use two measures of welfare generosity for our instruments: the real average and maximum of the state-specific AFDC/TANF benefit standard for families of 2, 3, or 4 or more persons. In equation (3) both mother's welfare participation and its interaction with welfare reform are treated as endogenous,

¹¹ Note that different mothers residing in the same state can be affected by different benefit levels. For instance, if a daughter is 12-18 in the years 1972-1978, then her mother will face a different AFDC benefit structure than a mother in the same state whose daughter is aged 12-18 in 1982-1988.

and thus the full set of instruments enter directly and interacted with the welfare reform indicator. Our difference-in-difference-type results with continuous instrumental variables can be interpreted in the spirit of Local Instrumental Variables, that is, intergenerational transmission is identified based on low-income mothers whose welfare participation decisions are influenced by policy values (see online supplement Section S.5.4 for derivations and discussion).

[Figure 4 here]

To characterize the state-level program variation we exploit for model identification, in Figure 4 we show percent changes in real AFDC/TANF benefit standards for a family of four after partialling out state and time fixed effects. The box plots show the interquartile range and median, and the extremes indicate the 10th and 90th percentile of states each year with outliers shown by state abbreviations. Although the changes tend to be smaller in more recent years, there is considerable variation across states that does not disappear over time. We provide further evidence on the variation of the instruments in Sections S.1.3 and S.10 of the online supplement, such as a variance decomposition of the within- and between-state components as well as a version that incorporates state-year price indices to better capture local price differences.

B. Misclassification Bias

Misreporting of welfare is present both at the extensive participation margin and the intensive dollar margin, it pervades all social surveys, and has gotten worse over time (Meyer et al., 2015a,b). Misreports can be in the form of false negatives—the respondent states they do not receive assistance when in fact they do— and false positives—the respondent states they receive assistance when in fact they do not. Based on validation studies of food stamps and TANF, most misclassifications are false negatives (Bollinger and David, 1997; Meyer and Mittag, 2017). Because remedies for classification bias are not straightforward in the context of dichotomous variables, we consider several approaches.

First, evidence in Bollinger and David (2005) shows that false negative survey responses decrease with length of panel participation. Since in our sample (described in the online supplement) we follow mothers for at least 13 years on average and daughters for 24 years, correct reporting should be more prevalent than in a sample with short observation windows. Second, for right-hand-side mismeasurement of mother’s participation, again recall that we measure if the mother participates in any prior year, which is likely to be less noisy than participation in any given period.¹² Third, for left-hand-side classification error, we consider parametric bias-corrections along the lines proposed in Bollinger and David (1997) and Hausman, Abrevaya, and Scott-Morton (1998). Specifically, the partial effect of mother’s participation on daughter’s participation from observed data is equal to

¹² The probability of ever misreporting tends to zero as the number of observations increases (see Section S.2 of the supplement).

$$(4) \quad P(y_{ist}^d = 1 | y_{is, \forall j < t}^m = 1, \bullet) - P(y_{ist}^d = 1 | y_{is, \forall j < t}^m = 0, \bullet) = (1 - \tau_{0t} - \tau_{1t})(\delta + \theta R_{st}^m),$$

where $\bullet$ represents other controls, τ_{0t} is the false positive reporting rate at time t , and τ_{1t} is the false negative reporting rate at time t . To implement this correction, we set the false positive rate to 0, and for the linear probability models we rescale all the right-hand-side variables in equation (3) by $(1 - \hat{\tau}_{1t})$, which is based on estimates of AFDC/TANF reporting rates in the PSID by Meyer et al. (2015b) as depicted in Table S.2-1 of the supplement. A convenient aspect of the proposed methodology is that it allows us to estimate models with endogenous variables using instrumental variables. This is an important innovation because, as discussed in the previous section, selection is likely to create biased estimates of the effect of welfare reform on the transmission parameter. Section S.2 of the supplement includes further development of the misclassification model.

V. Estimates of Welfare Reform on Intergenerational Transmission

In presenting the empirical results, we first advance the descriptive analysis presented in Table 1 by correcting for the influence of nonrandom selection and misclassification error on AFDC/TANF participation, and then expand the outcomes to include participation in additional transfer programs. All models control for daughter's age, age squared, mother's average age and its square during her potential welfare observation years. In addition, we include contemporaneous time-varying policy and economic controls for the daughter's state of residence, including the AFDC/TANF benefit standard, Earned Income Tax Credit (EITC) federal/state maximum credit, Supplemental Poverty Measure (SPM) poverty rate, AFDC/TANF reciprocity rate, and unemployment rate. We also include mother's modal state effects when the daughter was aged 12-18, daughter's current state effects, and year effects. The standard errors are robust to heteroscedasticity and clustered at the daughter's state level.¹³ The number of mother-daughter pairs used in this section are much larger than in Table 1 because we now permit the pairs to cross welfare regimes and include daughter observations at different age profiles and life circumstances.¹⁴

A. Baseline Estimates

The first four columns of Table 4 contain the baseline estimates of the parameters of interest in equation (3), with and without instrumental variables and corrections for misclassification of the dependent variable. The OLS estimate in column (1) is 0.145, which is smaller, as expected, than the estimate of 0.210 presented in column (1) in Table 1 obtained from a sample restricted to younger daughters. These differences, however, do not lead to meaningfully different percentage changes after

¹³ If we instead cluster using mother's modal state, the standard errors are similar to those reported in the next section. The change has no effect on claims of statistical significance of parameter estimates.

¹⁴ This expanded sample improves inference, but as demonstrated in the online supplement, the point estimates are qualitatively similar if we do not allow welfare-regime crossing.

reform (-69 percent and -63 percent). The IV estimate of the effect of mother’s AFDC participation prior to welfare reform in column (2) is 0.268 (s.e. = 0.049), meaning that if the daughter’s mother previously participated in AFDC, then the daughter is 27 percentage points more likely to participate as an adult.¹⁵ This estimate, which corrects for correlated unobservables between mother and daughter, is economically large and nearly double the OLS estimate in column (1), but is within the range of estimates among studies from that era surveyed in Page (2004). That correlation falls 68 percent after welfare reform to 0.085 (=0.268-0.183). This suggests changes in the probability of AFDC/TANF participation that are similar in magnitude to the descriptive results obtained in Table 1. To put this percent change in context, welfare transmission effects estimated in column (2) correspond to a 44 percent reduction in intergenerational participation if rescaled over baseline participation rates by reform period.¹⁶ The after-welfare reform variable has a positive coefficient, suggesting that, conditional on year effects, in the absence of welfare reform the trend increase in intergenerational AFDC/TANF transmission would have continued.¹⁷ We note, however, that dropping year effects results in a negative coefficient, which aligns with priors based on Figure 1.¹⁸

[Table 4 here]

While our baseline estimates address misclassification of the mother’s welfare participation by design (longer panels measuring any prior participation), they do not directly address the possibility of a binary mismeasured dependent variable. Columns (3) and (4) in Table 4 show the baseline estimates with misclassification bias corrections. As expected, the estimates are larger than those with no correction in columns (1) and (2), and indeed the corrected estimates without instruments in column (3) are on par with the uncorrected IV estimates in column (2). The IV estimates in column (4) suggest that the transmission from mother to daughter is stronger in the pre-reform AFDC period after adjusting for misclassification, but the post-reform reduction is still a large and statistically significant 51 percent. In the middle of Table 4, we present standard tests of instrument strength and exogeneity. The null hypothesis of weak

¹⁵ Since the PSID survey years switch to biennial interviewing after 1997, our data on welfare participation includes both responses for the prior observation year (T-1) and, after 1997, for the two-year retrospective (T-2). See the online supplement for results on the sensitivity to T-2 retrospective sample.

¹⁶ The change over the baseline is defined as $(a/b) - 1$, where a is the post-reform effect ($\hat{\delta} + \hat{\theta}$) rescaled by the average post-reform participation rate, and b is the pre-reform effect ($\hat{\delta}$) rescaled by the average participation over the whole period. See Section S.3 of the supplement for a detailed discussion on interpreting changes after reform.

¹⁷ There is the possibility that the positive coefficient reflects positive entry effects onto welfare among previous nonparticipants as they seek out employment and training (Moffitt, 1996). While some states did offer employment and training as part of their welfare reforms, most adopted a “work first” strategy.

¹⁸ Online supplement Figure S.3-1 shows that year effects in a model for AFDC/TANF participation are negative and decrease after reform, while year effects for SNAP or SSI participation are positive and increasing, as expected.

instruments is strongly rejected using the Kleibergen-Paap (2006) rank test, while the Hansen J-test of valid overidentifying restrictions is not rejected.¹⁹

Given that the baseline AFDC/TANF transmission effect fell two-thirds after reform, the estimates in columns (2) and (4) suggest that one-half or more of the decline in daughters' TANF participation after welfare reform comes from reduced generational transmission on that program.²⁰ Thus, while restricted access to the program for the daughters is a candidate explanation for some of the cross-sectional decline in participation, the evidence in Table 4 indicates that the behavior of daughters whose mothers participated in AFDC/TANF changed after reform, and this reduced transmission channel was sizable. These behavioral responses could include reduced entry or reentry to the program, which is consistent with the evidence in Grogger, Haider, and Klerman (2003) that shows that the declining cross-sectional participation stemmed more from reduced entry onto welfare than from increased exits.

In all variants of equation (3) estimated in the first four columns of Table 4, we find that the OLS estimate of mother's participation is smaller than the IV estimate, a result that is consistent with other papers in the literature (see, e.g., Dahl et al., 2014). Generally, the OLS estimate can be different from the IV estimate for, at least, three reasons: selection bias, heterogeneous effects, and measurement error. In our setting, it is difficult a priori to predict the sign of the bias of OLS. For instance, we may expect upward-biased OLS estimates under the assumption that unobservables are positively correlated over generations. However, the effects could be heterogeneous, too. Our sample includes a subpopulation of mothers who are not likely to be affected by the instruments because their family income is above the federal poverty line over the entire period of analysis. As our models control for both selection bias and misclassification error, based on the results shown in the online supplement to this paper, we conclude that the difference between IV and OLS estimates are likely attributed to heterogeneous effects.²¹

Even if welfare reform reduced the transmission of AFDC/TANF participation, a relevant policy question is the extent to which reform affects the intergenerational transmission of welfare participation defined more generally. In columns (5)-(8) of Table 4, we examine the effect of mother's AFDC/TANF participation and welfare reform on the daughter's decision to participate in AFDC/TANF, SNAP, or SSI. The specifications exactly parallel those in columns (1)-(4) and include the same regressors and state and

¹⁹ In Section S.5 of the supplement, we subject the baseline IV estimates to a number of specification checks, and we present the first-stage estimates of the effect of the instruments on the mother's participation decision.

²⁰ Following the decomposition shown in Section S.3.3 of the supplement, we find that at least one-half of the cross-sectional decline in participation comes from reduced transmission from mother to daughter.

²¹ Section S.5.4 of the online supplement shows, as expected, that low-income mothers exposed to higher AFDC/TANF benefits were more likely to participate in welfare. Moreover, IV estimates are increasing for subsamples in which the mother is ever below low percentages of the federal poverty line, yet the OLS estimates are relatively flat across these groups of mothers who are marginally more likely to receive welfare.

year fixed effects. The estimates in columns (5)-(8) show that the magnitude of intergenerational transmission is very similar prior to welfare reform—mother’s use of AFDC/TANF increased the odds of the daughter using welfare, food, or disability assistance in adulthood by 23 to 37 percentage points. But this is where the similarity ends as we find no evidence that this transmission channel was changed after welfare reform.²²

B. Robustness

While our baseline results address selection and misclassification, in this subsection we explore four possible sources of misspecification in equation (3), and we note several other robustness checks available in the online supplement.

B.1. Pre-existing and State-specific Trends

We begin by investigating whether latent trends or other confounders drive identification of the parameter of interest. To this end, we extend equation (3) using a generalized difference-in-difference-type model and estimate transmission effects by years before and after reform. In Figure 5, we plot OLS and IV estimates of the mother’s participation effect interacted with years relative to reform, and we also show results of our IV model first with state trends and then with both linear and quadratic state trends.²³ There are three main findings. First, the impact of welfare reform is clear given the absence of pre-trend effects followed by a distinct drop in AFDC/TANF transmission after the implementation of reform. The OLS and IV estimates for the pre-reform years are not significantly different from zero and seem to fluctuate around the flat dashed line. In contrast, we find a significant shift in AFDC/TANF participation within the first years after reform, and the effect of reform does not diminish over time (see panel A). Second, the mother’s effect on a daughter’s participation in the broader safety net is no different after reform (panel B). Third, the figure also shows that the point estimates in the baseline specification are robust to the inclusion of state-specific trends.

[Figure 5 here]

B.2. Life-Cycle Windows

A data constraint facing most intergenerational research is that full life cycles of daughters and mothers are generally not available, which could lead to two related forms of bias. One form of bias results from the fact that mothers and daughters are typically observed at different points of their life cycles. In the intergenerational income mobility literature, this is known as life-cycle bias (Jenkins, 1987; Haider and Solon, 2006; Lee and Solon, 2009; Nybom and Stuhler, 2016). A second form of bias,

²² In OLS results reported in supplement Table S.6-8 we obtain a similar result if we also define mother’s participation as any cash, food, or disability assistance.

²³ The augmented models follow closely the discussion in Wolfers (2006), although an important difference is that we estimate the model using instrumental variables. In Table S.6-1 of the online supplement, we also investigated the sensitivity of the results shown in Table 4 to the inclusion of linear and quadratic state time trends.

frequently referred to as the “window problem” in the welfare literature (Gottschalk, 1992, 1996; Wolfe et al., 1996; Page, 2004), occurs when the length of observation is too short for either, or perhaps both, generations. Our primary solution to the life-cycle bias and window problem is to utilize the much longer time series now available in the PSID compared to prior studies.

[Table 5 here]

We begin by showing the sensitivity of our previous results to restricting the window of observations by age to be the same for all mothers and daughters. By imposing this restriction, we ensure that within-generation differences in age do not drive the results. Table 5 shows estimates restricted to the observation window of the mother over ages 25 to 45, and of the daughter’s adulthood up to age 27. The transmission effects are somewhat larger in magnitude compared to our baseline results, yet the percent reduction in transmission levels in column (2) is about 47 percent.

We next present estimates that implement a life-cycle age adjustment proposed by Lee and Solon (2009) in the context of income mobility. Specifically, we augment the model with a quartic in the average age of the mother during prior (to time t) periods of potential welfare participation, a quartic in the detrended daughter’s current age, and the interactions between the quartic in daughter’s detrended age and mother’s participation as well as the indicator for mother’s participation after welfare reform.²⁴ Because fertility rates among low-income women peak in their mid-20s, we detrend around daughter’s age of 25. Comparing the OLS and IV estimates in columns (1) and (2) of Table 4 to columns (3) and (4) in Table 5, it is clear that the age adjustments do not influence the results qualitatively, and with only small quantitative differences in the pre-reform era and slightly larger attenuation (in absolute value) in the post-reform era.

B.3. Migration

Our models to this point have allowed for the possibility that daughters reside in a different state than their mothers and/or have moved to another state during adulthood. If such movements are an endogenous response to the welfare climate in the state, then this could lead to biased estimates of welfare reform and the transmission across generations. The evidence on whether there is endogenous internal migration in response to welfare generosity in the U.S. is mixed (Levine and Zimmerman, 1999; Gelbach, 2004; McKinnish, 2007), yet when effects are found, they are very small in magnitude. Also, Ziliak et al. (2000), as well as evidence in the online supplement, show that states’ decisions to adopt waivers were not an endogenous response to the growing welfare caseload in the early 1990s. These findings suggest

²⁴ Note that the interactions with mother’s welfare participation are endogenous in our setting, and therefore, in the IV model of column (4), we instrument the interaction variable using the detrended quartic in daughter’s age times the average and maximum of mother’s AFDC/TANF benefit standard when the daughter was living with the mother and she was between 12 and 18 years old, and we also use these instruments interacted with reform.

that state-level welfare policies like the maximum guarantee are exogenous to an individual's welfare choice.

As a test on our baseline sample, we consider two alternatives to our model by restricting the sample of daughters to those who reside in the same state as their birth state, and those who never move during their observed lifetime. Columns (5)-(8) of Table 5 show that both the direct effect of mothers' participation and the interaction with welfare reform are larger in absolute value compared to estimates in Table 4, yet the changes are relatively proportional such that the percent reduction in levels of transmission after welfare reform is roughly the same.²⁵

B.4. Attrition

It has been extensively documented that survey weights effectively address non-random sampling, although they may not fully correct for attrition.²⁶ In Section S.8 of the online supplement, we present results for samples that range from daughters who do not attrit (1,906 daughters) to the full sample of daughters with no condition on attrition behavior (2,961 daughters). We also show results for the full sample based on an estimator that uses inverse probability weighting in addition to survey weights. The baseline estimates are not sensitive to the proportion of daughters who are attriters, and there are only small differences between our baseline results and the results obtained by rescaling survey weights with inverse probability weights.

VI. Broader Impacts of Welfare Reform and Possible Explanations

We continue our investigation by evaluating possible mechanisms related to the main results. The evidence in this section suggests that the reform did not improve economic outcomes of daughters, which can explain the increased participation in the broader safety net. The evidence also suggests that the intergenerational transmission pathway is direct from mother's welfare to daughter's welfare, mainly by exposure during critical years, and to a lesser degree, by word-of-mouth transmission from adult mother to adult daughter. The reform appears to have dramatically affected the latter mechanism.²⁷

²⁵ In results not shown here to save space, we also estimated the model by restricting the sample of daughters to those residing in the same state as their mothers. Notably, a comparison of estimates suggests that the magnitudes are larger in absolute value as we tighten the geographic link between mother and daughter, and are suggestive that the mobility of daughters across state lines can "undo" some of the intergenerational transmission of welfare.

²⁶ Fitzgerald, Gottschalk, and Moffitt (1998) suggest weights based on the inverse probability of responding to the survey, and to then use them in a second stage where parameters in the structural model are estimated (see also Wooldridge, 2007).

²⁷ As suggested by a reviewer, changes in the composition of welfare mothers could also be a potential mechanism. Using Figure S.5-4 in the online supplement, we investigate the effect of changes in the composition of families by re-estimating the model in column (2) of Table 4 by education and income of the mother, with and without inverse weighting by number of daughters per mother. Consistent with the cross-sectional evidence presented in Table 2 columns (1)-(4), the results suggest that changes in maternal composition do not appear to be a leading explanation for the change in the intergenerational transmission parameter.

A. Additional Socioeconomic Outcomes

In addition to reducing welfare participation, the architects of welfare reform aimed to improve the long-term socioeconomic outcomes of children. In Table 6, we present OLS and IV estimates of equation (3) where we replace the dependent variable of daughter's welfare participation with indicators equal to 1 for (a) whether her family currently has zero earnings, (b) whether her current family earnings are below the poverty line, (c) whether the daughter is unmarried and non-cohabiting, and (d) whether the daughter moves to another state.²⁸ For these adult outcome estimates, we restrict the sample to only daughters at least 19 years old with non-missing data on earnings and marital status, and thus a slightly smaller sample than in Table 4. Here we find a consistent pattern that daughters exposed to welfare are at risk of worse outcomes in adulthood. The IV estimates suggest they are 14 percentage points more likely to have episodes of nonemployment compared to daughters not exposed, and 35 percentage points more likely to have earnings below poverty in a given year. Daughters whose mothers received AFDC/TANF are also 39 percentage points more likely to be unmarried/non-cohabiting, and 3 percentage points less likely to move. We extend the analysis of Table 6 to investigate if there is evidence of pre-existing trends in these other adult daughter outcomes, which we summarize in Figure 6. The figure shows estimates of the interaction between mother's participation in AFDC/TANF and after welfare reform. There is no evidence of pre-existing trends or reform effects in the post period for other daughter outcomes.

[Table 6 and Figure 6 here]

While the reform did not change adult outcomes typically related to welfare participation, we next consider the potential impact of the reform on two outcomes during daughters' teenage years. Following the format used in Table 6, the first four columns of Table 7 present OLS and IV estimates of equation (3) for (a) whether the daughter's educational attainment is less than or equal to high school, and (b) whether she had a child when she was a teenager. Daughters whose mothers participated in AFDC/TANF are 55 percentage points more likely to have lower educational attainment, and 72 percentage points more likely to have a child when aged 19 or under. Similar to the results presented in Table 6, however, welfare reform did not change these outcomes for daughters who grew up on AFDC/TANF assistance. Thus, the evidence in Tables 6 and 7, as well as in Figure 6, indicates that the 1996 reform to welfare did not substantively alter broader socio-economic outcomes for daughters either in adolescence or later in adulthood. We now turn our attention to early exposure and adult learning as possible mechanisms.

[Table 7 here]

²⁸ Cohabitation is difficult to measure, particularly with respect to consistency in terms of the definition. Before 1983, over 1 year cohabiting is included with marriage, and after 1983, the PSID separately identifies spouse with cohabiting spouse. Thus, our measure includes both marriage and cohabiting.

B. Co-residency Exposure and Word of Mouth

If daughters' teen and later adult life outcomes are not affected by reform, the reduction of intergenerational AFDC/TANF dependence could be associated with changes in co-residence exposure or updating beliefs through learning as an adult. In the last columns of Table 7, we examine how the base-case IV estimates in Table 4 change if we restrict the daughter's potential welfare exposure to only periods of co-residence. Recall that in Table 4, the daughter could be influenced by her mother's welfare use at any time prior to the current period t , including when the daughter no longer lived at home but had younger siblings at home such that her mother was potentially welfare-eligible. In column (5) of Table 7, we find a larger pre-reform transmission effect and a proportional decrease after reform. Transmission falls 67 percent after welfare reform to 0.096 ($=0.293-0.197$), similar to the 68 percent decrease in column (2) of Table 4.

A daughter's exposure to welfare in periods of co-residence and her resulting propensity for dependence will likely vary as a function of her mother's duration of participation, or otherwise stated, her intensity of treatment exposure.²⁹ In order to investigate if the mother's effect varies by duration, we redefine a mother's welfare participation as greater than 1 year or greater than 5 years, and we re-estimate the model in column (5) for each variation. Columns (6) and (7) of Table 7 show the effects of a mother's welfare participation differentiated by short- and long-term welfare exposure. The IV estimates indicate, consistent with expectations, that the pre-reform transmission effect of long-term exposure on welfare during co-residency is larger than the effect of short-term exposure. Interestingly, the percent reduction in transmission after reform in column (7) is about 13 percent larger than in column (6), suggesting that the reform had a bigger impact on daughters with high intensity of AFDC/TANF exposure during co-residence. Effectively, welfare reform led to fairly similar levels of intergenerational transmission in the post-reform era such that long-term exposure is no different from short-term exposure relative to the daughter's probability of participation as an adult.³⁰

Transmission can also occur via word-of-mouth from mother to daughter after the daughter has left home to form her own family unit. This channel can be associated with verbal transmission, as opposed to exposure during co-residence. As a further exploration of mechanisms, column (8) in Table 7 presents fixed-effects estimates of the welfare transmission.³¹ Identification of the direct, pre-reform effect of mother's participation is subtle in the fixed-effects specification. If the mother joins welfare

²⁹ Gottschalk and Moffitt (1994) propose measuring welfare dependence as the total time on welfare or the total percent of income from transfers, and Pepper (2000) models daughters' welfare outcomes depending on categorical definitions of mothers' duration in years.

³⁰ The transmission effect after reform is 0.091 (0.031) for short-term exposure and 0.107 (0.071) for long-term.

³¹ The daughter fixed effect is likely to contain a component common to the daughter and the mother (including health status or attitudes), as well as that which is daughter-specific such as school quality and neighborhood.

while the daughter co-resides then we cannot separate this from the fixed effect; however, if she joins welfare after the daughter leaves home, which can occur if the daughter has younger siblings still at home with the mother, then verbal transmission of the program can still occur and identify the parameters of interest. The direct effect of mother's transmission in column (8) of Table 7 is about 26 percent of the size of the estimate from column (2) of Table 4, suggesting that word-of-mouth transmission can still be sizable even after the daughter leaves home. Further, the reform effect on the word-of-mouth transmission mechanism implies a net negative influence on daughters' AFDC/TANF participation after reform of -5.5 percentage points ($=0.071-0.126$). Mothers with experience on welfare may actively discourage their daughters to take up TANF, consistent with Blank and Kovak's (2009) concept of "disconnected mothers" who are neither working nor receiving TANF assistance in the reform era. The fact that welfare reform eliminates word-of-mouth transmission and not co-resident exposure transmission suggests that reform may have affected the relative incentives for welfare program participation more than it addressed self-sufficiency, which may also help explain program switching from AFDC/TANF to SNAP or SSI.

VII. Conclusion

A focal aim of policymakers with the 1990s welfare reform was to end dependence on welfare. In addition to documenting the descriptive changes in welfare dependence across generations, we provide causal estimates of welfare transmission that imply daughters are about 27 to 43 percentage points more likely to participate if their mothers had participated in welfare. These estimates are larger than those found by Dahl et al. (2014), a prominent study of causal welfare transmission, yet our context is public assistance for mothers and daughters in the United States, whereas Dahl et al. examine disability insurance receipt in Norway. Viewed narrowly from the lens of participation in the AFDC/TANF program, we find strong evidence that the level of transmission from mother to daughter was reduced by at least one-half. Despite the statistical challenges we face in this work, one consistent interpretation of these results implies that when AFDC/TANF use fell precipitously after 1996, the reform had a differential impact on TANF participation among adult daughters who were exposed to welfare in their childhood from those who were not. This substantial reduction in the odds of participation suggests that at least one-half of the decline in daughters' cross-sectional TANF participation after welfare reform comes from reduced transmission on that program. This result seems to be associated with, at least, two possible non-exclusive channels: the reform changed incentives making family experience with cash welfare less influential, and it eliminated word-of-mouth knowledge spillovers across generations.

Beyond participation in AFDC/TANF, however, the 1996 welfare reform did not alter the generational economic bonds between mother and daughter. Our findings suggest that welfare reform did not change the transmission of participation in the wider safety net including food and disability assistance, nor did it alter the ties between mothers' welfare use and daughters' later life outcomes of

human capital or labor market success. These results expand on previous null effects of welfare reform on intragenerational economic outcomes (Blank, 2002; Moffitt, 2003; Ziliak, 2016). At first blush, this lack of effect on economic success seems surprising given the scale and scope of reform. However, the TANF program is substantially less target-efficient and does not entail much investment in long-term economic self-sufficiency. A potential consequence is the stagnating mobility of daughters. Daughters were no better off in broader economic status, which contributed to the intergenerational substitution of programs and increasing welfare use in the wider safety net in the period after reform.

We conclude by noting that the socially efficient intergenerational correlation of welfare outcomes is not obvious. In some cases, there may be positive attributes to intergenerational transmission of welfare knowledge if take-up rates are low and learning the welfare system helps needy recipients (Currie, 2006). This suggests a need for future theoretical and empirical research on optimal transfer program design that incorporates knowledge spillovers across generations.

REFERENCES

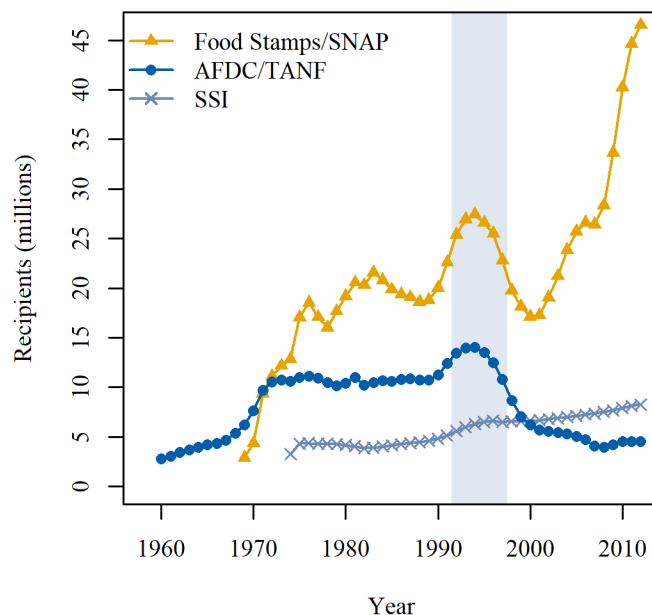
- Antel, J.J. (1992): “The intergenerational transfer of welfare dependency: Some statistical evidence,” *Review of Economics and Statistics*, 74, 467–473.
- Becker, G.S., and N. Tomes (1979): “An equilibrium theory of the distribution of income and intergenerational mobility,” *Journal of Political Economy*, 87, 1153–1189.
- (1986): “Human capital and the rise and fall of families,” *Journal of Labor Economics*, 4, S1–39.
- Bitler, M., and H. Hoynes (2016): “The more things change, the more they stay the same: The safety net and poverty in the Great Recession,” *Journal of Labor Economics*, 34, S403–S444.
- Black, S.E., and P.J. Devereux (2011): “Recent developments in intergenerational mobility,” in *Handbook of Labor Economics*, vol. 4, O. Ashenfelter and D. Card (eds.), North Holland, 1487–1541.
- Blank, R. (2002): “Evaluating welfare reform in the United States,” *Journal of Economic Literature*, 40, 1105–1166.
- Blank, R., and B.K. Kovak (2009): “The growing problem of disconnected single mothers,” in *Making the Work-Based Safety Net Work Better*, C.J. Heinrich and J.K. Scholz (eds.), New York: Russell Sage, 227–258.
- Bollinger, C., and M. David (1997): “Modeling discrete choice with response error: Food stamp participation,” *Journal of the American Statistical Association*, 92, 827–835.
- (2005): “I didn’t tell, and I won’t tell: Dynamic response error in the SIPP,” *Journal of Applied Econometrics*, 20, 563–569.
- Cancian, M., and D. Reed (2009): “Family structure, childbearing, and parental employment: Implications for the level and trend in poverty,” in *Changing Poverty, Changing Policies*, M. Cancian and S. Danziger, (eds.), New York: Russell Sage Foundation, 92–121.
- Chetty, R., D. Grusky, M. Hell, N. Hendren, R. Manduca, and J. Narang (2017): “The fading American dream: Trends in absolute income mobility since 1940,” *Science*, 356, 398–406.
- Crouse, G. (1999): “State implementation of major changes to welfare policies, 1992-1998,” Technical document, U.S. Department of Health and Human Services.
- Currie, J. (2006): “The take up of social benefits,” in *Public Policy and the Income Distribution*, A. Auerbach, D. Card, and J.M. Quigley (eds.), New York: Russell Sage, 80–148.

- Dahl, G.B., A.R. Kostøl, and M. Mogstad (2014): “Family welfare cultures,” *Quarterly Journal of Economics*, 129, 1711–1752.
- DeParle, J. (2004): *American Dream: Three Women, Ten Kids, and a Nation’s Drive to End Welfare*. New York: Penguin Books.
- Duncan, G.J., M.S. Hill, and S.D. Hoffman (1988): “Welfare dependence within and across generations,” *Science*, 239, 467–471.
- Durlauf, S.N., and I. Shaorshadze (2014): “Intergenerational mobility,” in *Emerging Trends in the Social and Behavioral Sciences*, R.A. Scott and S.M. Kosslyn (eds.), Sage Publishing, 505–537.
- Edin, K., and L. Lein (1997): *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*. New York, NY: Russell Sage Foundation.
- Fitzgerald, J.M., P.T. Gottschalk, and R.A. Moffitt (1998): “An analysis of sample attrition in panel data: The Michigan Panel Study of Income Dynamics,” *Journal of Human Resources*, 33, 251–299.
- Ganong, P., and J.B. Liebman (2018): “The decline, rebound, and further rise in SNAP enrollment: Disentangling business cycle fluctuations and policy changes,” *AEJ: Economic Policy*, 10, 153–176.
- Garrett, B. and S. Glied (2000): “Does state AFDC generosity affect child SSI participation?” *Journal of Policy Analysis and Management*, 19, 275–295.
- Gelbach, J. (2004): “Migration, the life cycle, and state benefits: How low in the bottom?” *Journal of Political Economy*, 112, 1091–1130.
- Gottschalk, P.T. (1992): “The intergenerational transmission of welfare participation: Facts and possible causes,” *Journal of Policy Analysis and Management*, 11, 254–272.
- (1996): “Is the correlation in welfare participation across generations spurious?” *Journal of Public Economics*, 63, 1–25.
- Gottschalk, P.T., and R.A. Moffitt (1994): “Welfare dependence: Concepts, measures, and trends,” *American Economic Review: Papers and Proceedings*, 84, 38–42.
- Grogger, J. (2003): “The effects of time limits, the EITC, and other policy changes on welfare use, work, and income among female-headed families,” *Review of Economics and Statistics*, 85, 394–408.
- Grogger, J., S.J. Haider, and J. Klerman (2003): “Why did the welfare rolls fall during the 1990s?” *American Economic Review: Papers and Proceedings*, 93, 288–292.
- Grogger, J., and L.A. Karoly (2005): *Welfare Reform: Effects of a Decade of Change*. Cambridge, MA: Harvard University Press.
- Haider, S.J., and G. Solon (2006): “Life-cycle variation in the association between current and lifetime earnings,” *American Economic Review*, 96, 1308–1320.
- Halpern-Meehin, S., K. Edin, L. Tach, and J. Sykes (2015): *It’s Not Like I’m Poor: How Working Families Make Ends Meet in a Post-Welfare World*. Oakland, CA: University of California Press.
- Haskins, R. (2007). *Work over Welfare: The Inside Story of the 1996 Welfare Reform Law*. Washington, DC: Brookings Institution Press.
- Hausman, J.A., J. Abrevaya, and F. Scott-Morton (1998): “Misclassification of the dependent variable in a discrete-response setting,” *Journal of Econometrics*, 87, 239–269.
- Heckman, J.J. (1978): “Dummy endogenous variables in a simultaneous equation system,” *Econometrica*, 46, 931–959.
- Heckman, J.J., J. Stixrud, and S. Urzua (2006): “The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior,” *Journal of Labor Economics*, 24, 411–482.
- Jenkins, S. (1987): “Snapshots versus movies: ‘Lifecycle biases’ and the estimation of intergenerational earnings inheritance,” *European Economic Review*, 31, 1149–1158.
- Kleibergen, F., and R. Paap (2006): “Generalized reduced rank tests using the singular value decomposition,” *Journal of Econometrics*, 133, 97–126.

- Kreider, B., J.V. Pepper, C. Gundersen, and D. Jolliffe (2012): “Identifying the effects of SNAP (food stamps) on child health outcomes when participation is endogenous and misreported,” *Journal of the American Statistical Association*, 107, 958–975.
- Kubik, J. (1999): “Incentives for the identification and treatment of children with disabilities: The Supplemental Security Income program,” *Journal of Public Economics*, 73, 187–215.
- Lee, C., and G. Solon (2009): “Trends in intergenerational income mobility,” *Review of Economics and Statistics*, 91, 766–772.
- Levine, P.B. and D.J. Zimmerman (1996): “The intergenerational correlation in AFDC participation: Welfare trap or poverty trap?” Discussion paper, Univ. of Wisconsin Institute for Research on Poverty.
- (1999): “An empirical analysis of the welfare magnet debate using the NLSY,” *Journal of Population Economics*, 12, 391–409.
- (2005): “Children’s welfare exposure and subsequent development,” *Journal of Public Economics*, 89, 31–56.
- Lindbeck, A., S. Nyberg, and J. W. Weibull (1999): “Social norms and economic incentives in the welfare state,” *Quarterly Journal of Economics*, 114, 1–35.
- Mazumder, B. (2005): “Fortunate sons: New estimates of intergenerational mobility in the United States using Social Security earnings data,” *Review of Economics and Statistics*, 87, 235–255.
- McKinnish, T. (2007): “Cross-border welfare migration: New evidence from micro data,” *Journal of Public Economics*, 91, 437–450.
- Meyer, B., and N. Mittag (2017): “Misclassification in binary choice models,” *Journal of Econometrics*, 200, 295–311.
- Meyer, B., W. Mok, and J. Sullivan (2015a): “Household surveys in crisis,” *Journal of Economic Perspectives*, 29, 199–226.
- (2015b): “The under-reporting of transfers in household surveys: Its nature and consequences,” NBER working paper 15181. Updated version June 2015.
- Moffitt, R.A. (1992): “Incentive effects of the U.S. welfare system: A review,” *Journal of Economic Literature*, 30, 1–61.
- (1996): “The effect of employment and training programs on entry and exit from the welfare caseload,” *Journal of Policy Analysis and Management*, 15, 32–50.
- (2003): “Temporary Assistance for Needy Families,” in *Means-Tested Transfer Programs in the United States*, R.A. Moffitt (ed.), Chicago: University of Chicago Press.
- Murray, C. (1984). *Losing Ground: American Social Policy, 1950-1980*. New York: Basic Books.
- Nyblom, M., and J. Stuhler (2016): “Heterogeneous income profiles and life-cycle bias in intergenerational mobility estimation,” *Journal of Human Resources*, 51, 239–268.
- Page, M.E. (2004): “New evidence on the intergenerational correlation in welfare participation,” in *Generational Income Mobility in North America and Europe*, Cambridge University Press, 226–244.
- Pepper, J.V. (2000): “The intergenerational transmission of welfare receipt: A nonparametric bounds analysis,” *Review of Economics and Statistics*, 82, 472–488.
- Schmidt, L., and P. Sevak (2004): “AFDC, SSI, and welfare reform aggressiveness: Caseload reductions vs. caseload shifting,” *Journal of Human Resources*, 39, 792–812.
- Solon, G. (1992): “Intergenerational income mobility in the United States,” *American Economic Review*, 82, 393–408.
- (1999): “Intergenerational mobility in the labor market,” in *Handbook of Labor Economics*, vol. 3A, O. Ashenfelter and D. Card (eds.), Amsterdam: North Holland, 1761–1800.
- Solon, G., M. Corcoran, R. Gordon, and D. Laren (1988): “Sibling and intergenerational correlations in welfare program participation,” *Journal of Human Resources*, 23, 388–396.

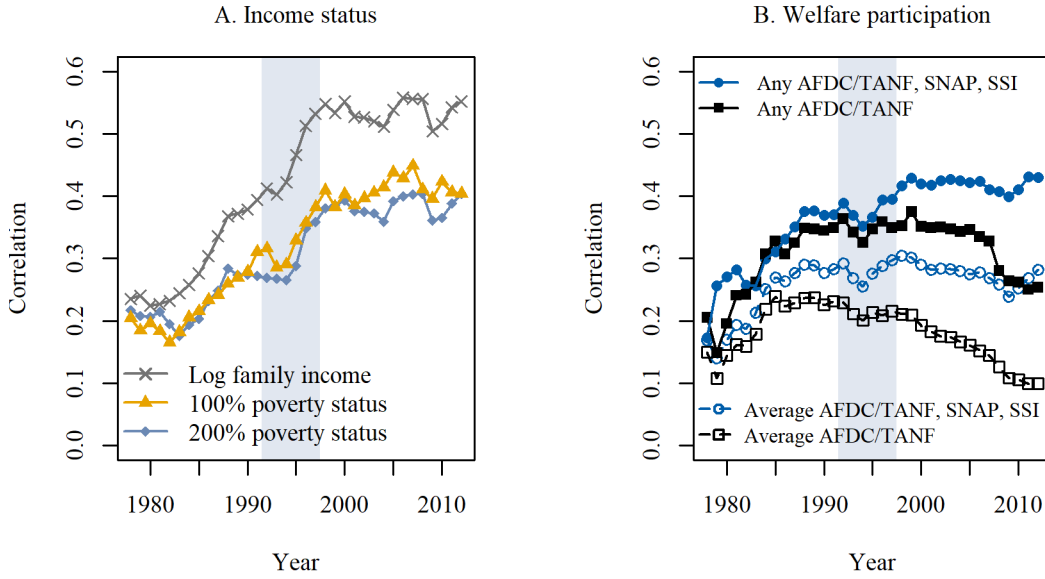
- Wolfe, B.L., R. Haveman, D. Ginther, and C.B. An (1996): “The ‘window problem’ in studies of children’s attainments” *Journal of the American Statistical Association*, 91, 970–982.
- Wolfers, J. (2006): “Did unilateral divorce raise divorce rates? A reconciliation and new results,” *American Economic Review*, 96, 1802–1820.
- Wooldridge, J.M. (2007): “Inverse probability weighted m-estimation for general missing data problems,” *Journal of Econometrics*, 141, 1281–1301.
- Ziliak, J.P. (2015): “Why are so many Americans on food stamps? The role of the economy, policy, and demographics,” in *SNAP Matters: How Food Stamps Affect Health and Well Being*, J. Bartfeld, C. Gundersen, T. Smeeding, and J.P. Ziliak (eds.), Stanford, CA: Stanford University Press, 18–48.
- (2016): “Temporary Assistance for Needy Families,” in *Economics of Means-Tested Transfer Programs in the United States*, vol. 1, R.A. Moffitt (ed.), University of Chicago Press.
- Ziliak, J.P., D. Figlio, E. Davis, and L. Connolly (2000): “Accounting for the decline in AFDC caseloads: Welfare reform or the economy?” *Journal of Human Resources*, 35, 570–586.

FIGURE 1. TRENDS IN AFDC/TANF, FOOD STAMP/SNAP, SSI RECIPIENTS



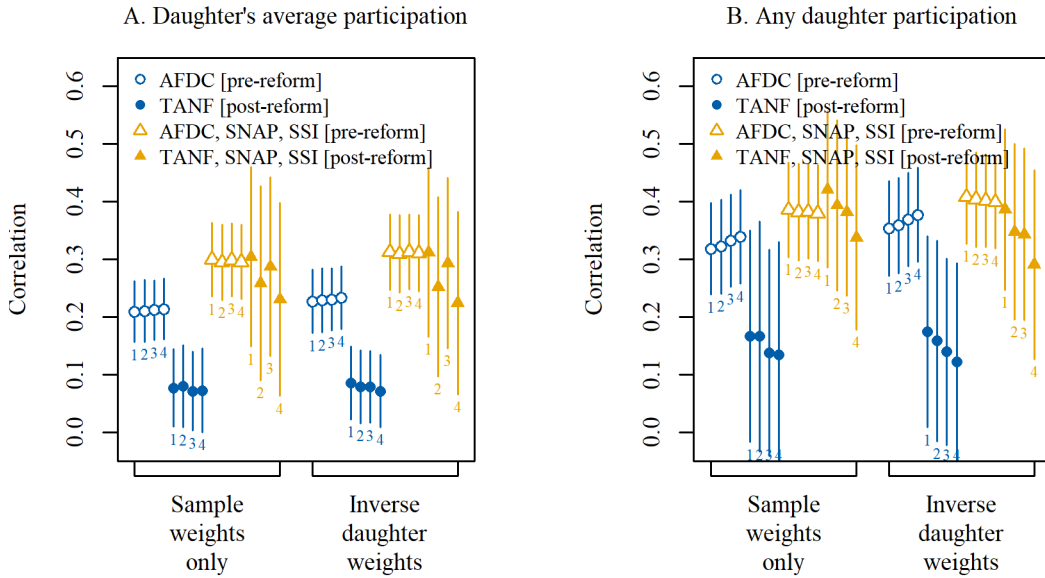
Notes: The welfare reform waiver period is indicated by the shaded region. Abbr.: Aid to Families with Dependent Children/Temporary Assistance for Needy Families, AFDC/TANF; Supplemental Nutrition Assistance Program, SNAP; and Supplemental Security Income, SSI. Authors’ tabulations of data collected from the Departments of Health and Human Services, Agriculture, and the Social Security Administration.

FIGURE 2. TRENDS IN INTERGENERATIONAL CORRELATIONS OF INCOME STATUS AND WELFARE PARTICIPATION



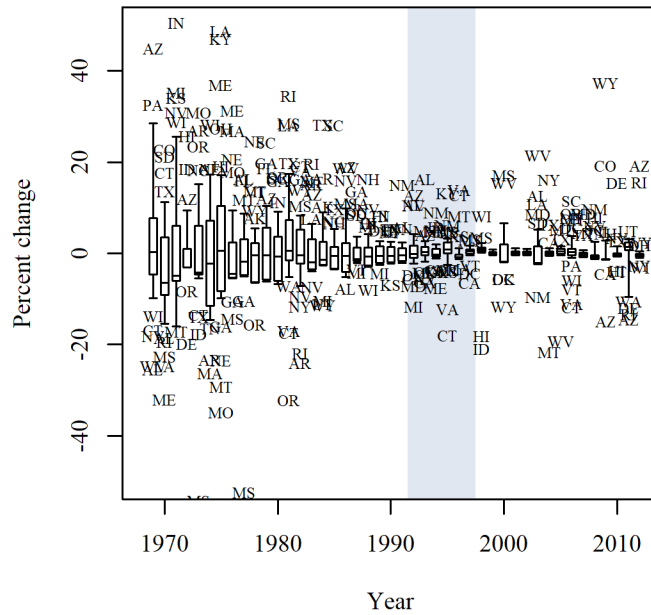
Notes: The welfare reform waiver period is indicated by the shaded region. The outcomes include the log of family income, whether an individual's mean family income is below 100 or 200 percent of the mean federal poverty line, and participation in AFDC/TANF (or, AFDC/TANF, SNAP, or SSI). Daughter outcomes are observed during adulthood for ages 19-27, and mother outcomes before the daughter becomes an adult. The trends are obtained for daughters aged 27-42 in each year.

FIGURE 3. INTERGENERATIONAL CORRELATIONS WITHIN PRE-/POST-REFORM REGIMES, BY WELFARE DEFINITION



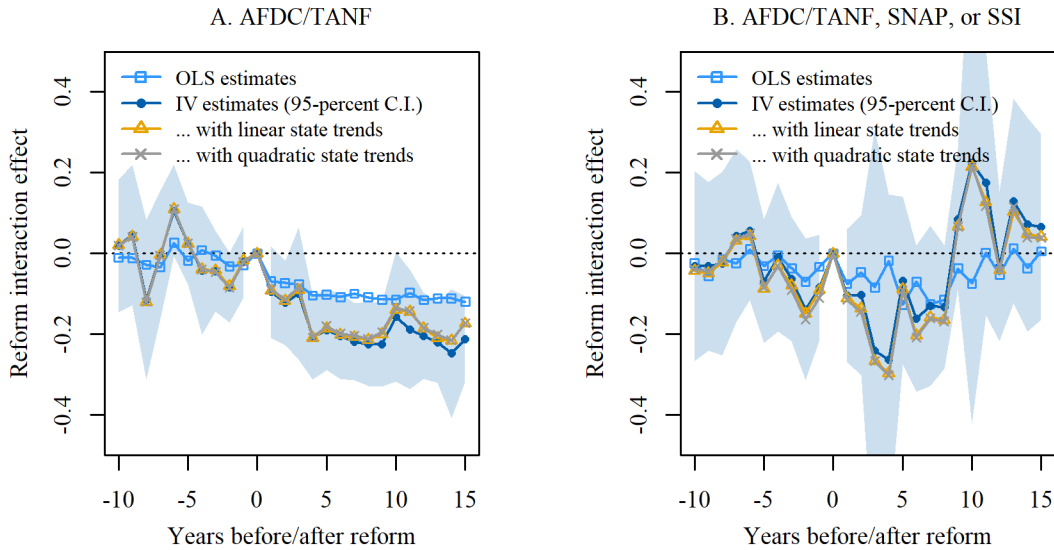
Notes: The outcomes include participation in AFDC/TANF or AFDC/TANF, SNAP, or SSI by participation defined as average probability in panel A or any participation in panel B. The observation windows vary by daughter's exposure ages (12-16 or 12-18) for mother's participation and daughter's adult observation ages (through age 27 or 19-27). The windows are denoted: 1) ages 12-18 for exposure and 19-27 as an adult; 2) ages 12-16 for exposure and 19-27 as an adult; 3) ages 12-18 for exposure and through age 27 as an adult; or, 4) ages 12-16 for exposure and through age 27 as an adult. Daughter exposure observations are restricted to pre-adult years, and adulthood is conditional on beginning a new family unit through childbirth or leaving home; observations do not overlap across generations by construction.

FIGURE 4. YEAR-TO-YEAR PERCENT CHANGES IN DEVIATIONS FROM STATE AND YEAR AVERAGES OF REAL AFDC/TANF BENEFIT STANDARDS FOR A FAMILY OF FOUR, BY STATE



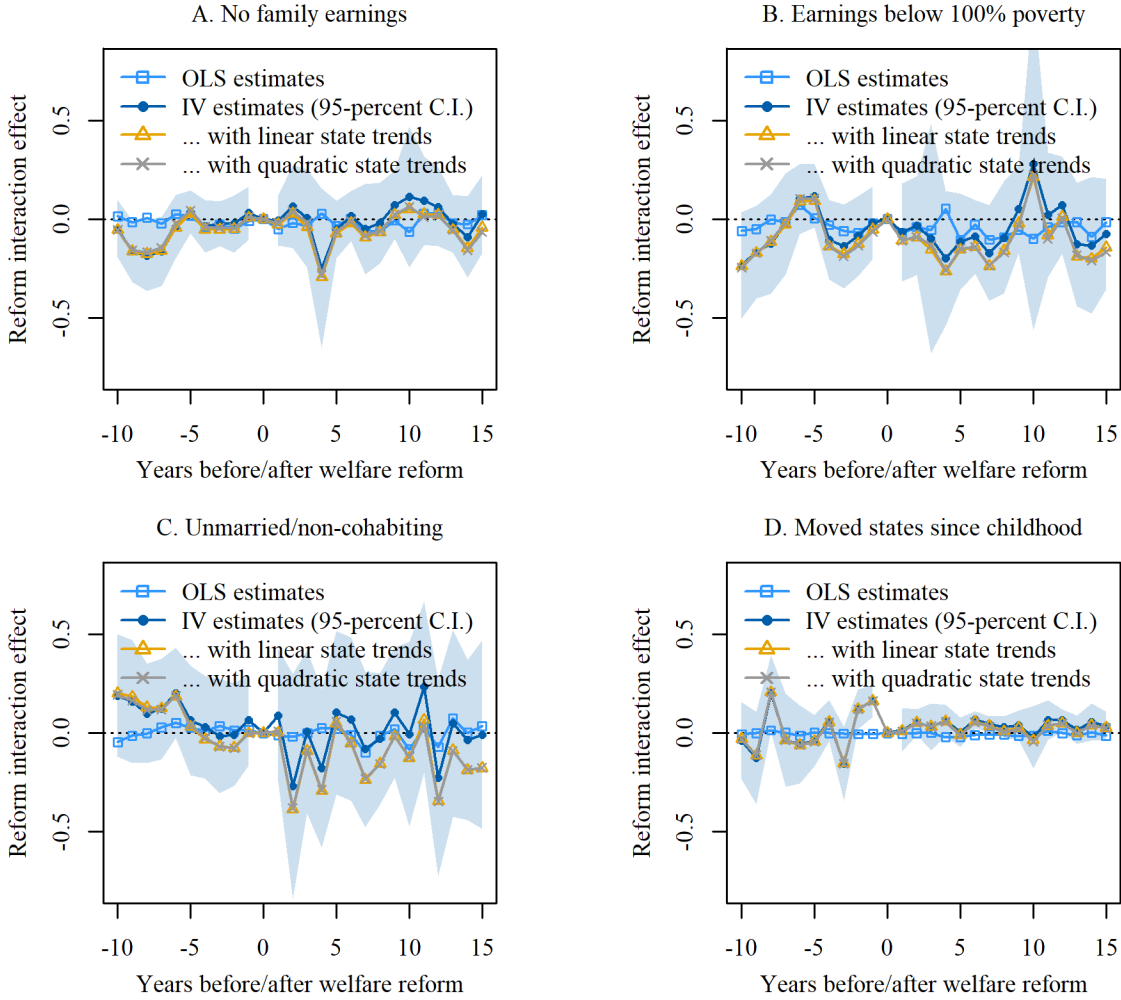
Notes: The percent changes are shown yearly for all 50 states and the District of Columbia based on real AFDC/TANF maximum benefits for a family of four (in 2012 dollars) after partialling out state and year effects. The box plots show the interquartile range and median, and the extremes indicate the 10th and 90th percentile of states each year. States outside of the 10-90 range are indicated by their abbreviations. Some data points (13) are out of range and thus not shown: 1969-1978; AL, AK, AR, DE, FL, ME, MS (x5), MO, and WV.

FIGURE 5. TIMING OF WELFARE REFORM EFFECTS ON INTERGENERATIONAL TRANSMISSION



Notes: Estimates are shown with the baseline set of control variables reported in notes to Table 4 and mother's prior AFDC/TANF participation interacted with reform indicators by year before/after implementation. For IV estimates, the instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with welfare reform indicators by year before/after implementation. A 95-percent pointwise confidence interval is shown based on state-clustered estimates for the main IV effects without additional controls for state-specific trends.

FIGURE 6. TIMING OF WELFARE REFORM EFFECTS FOR ADDITIONAL DAUGHTER OUTCOMES OF INTEREST



Notes: See Figure 5 notes. Estimates correspond to outcomes shown in Table 6.

TABLE 1. INTERGENERATIONAL WELFARE PARTICIPATION CORRELATIONS WITHIN WELFARE REGIMES PRE- OR POST-REFORM

Daughter outcome, ages 19-27:	AFDC/TANF				AFDC/TANF, SNAP, SSI			
	Before (1)	After (2)	Before (3)	After (4)	Before (5)	After (6)	Before (7)	After (8)
Welfare reform timing:								
Mother's participation	0.210	0.078	0.228	0.087	0.300	0.305	0.313	0.313
when daughter aged 12-18	(0.027)	(0.034)	(0.028)	(0.032)	(0.033)	(0.079)	(0.034)	(0.074)
Inverse daughter weights?	No	No	Yes	Yes	No	No	Yes	Yes
Effect of welfare reform		-0.132		-0.141		0.005		0.000
p-value		0.004		0.002		0.909		0.966
Percent change in levels		-63%		-62%		2%		0%
p-value		0.001		0.000		0.873		0.993
Number of mother-daughter pairs	1254	476	1254	476	1254	476	1254	476

Notes: Robust standard errors are shown in parentheses. Estimation is restricted to daughters who can be observed at least 5 years during the critical exposure period, ages 12-18. Daughters observed before reform include only those mother-daughter pairs in which neither experiences welfare reform through the daughter's age 27. The after-reform sample is defined by daughters who are observed during the welfare reform era from age 12 onward. Estimates are conditional on a quadratic in mother's age and daughter's state-level controls averaged over the daughter's adult observation years. Daughter's welfare participation variable is the average participation during ages 19-27, and mother's welfare participation is 1 if she participates in any year when the daughter is aged 12-18 and 0 otherwise. P-values are obtained by a bootstrap procedure with 1000 replications.

TABLE 2. INTERGENERATIONAL AFDC/TANF PARTICIPATION WITHIN WELFARE REGIMES
PRE- OR POST-REFORM BY SUBSAMPLES FOR LOW MATERNAL EDUCATION AND INCOME

Daughter outcome, ages 19-27: Welfare reform timing:	AFDC/TANF				AFDC/TANF, SNAP, SSI			
	Before	After	Before	After	Before	After	Before	After
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Low-educated mothers								
Mother's participation when daughter aged 12-18	0.228 (0.030)	0.027 (0.034)	0.240 (0.031)	0.024 (0.032)	0.323 (0.037)	0.129 (0.116)	0.323 (0.037)	0.143 (0.106)
Inverse daughter weights?	No	No	Yes	Yes	No	No	Yes	Yes
Effect of welfare reform		-0.201		-0.216		-0.194		-0.181
p-value		0.000		0.000		0.320		0.334
Percent change in levels		-88%		-90%		-60%		-56%
p-value		0.000		0.000		0.330		0.343
Number of mother-daughter pairs	968	200	968	200	968	200	968	200
B. Low-income mothers								
Mother's participation when daughter aged 12-18	0.190 (0.035)	0.088 (0.037)	0.224 (0.036)	0.097 (0.037)	0.272 (0.042)	0.266 (0.087)	0.293 (0.043)	0.277 (0.082)
Inverse daughter weights?	No	No	Yes	Yes	No	No	Yes	Yes
Effect of welfare reform		-0.103		-0.127		-0.006		-0.016
p-value		0.055		0.021		0.968		0.839
Percent change in levels		-54%		-57%		-2%		-5%
p-value		0.038		0.008		0.966		0.903
Number of mother-daughter pairs	727	373	727	373	727	373	727	373

Notes: See Table 1 notes. The low-educated mothers sample is defined for those with high school or less educational attainment, and the low-income sample is defined by those with any prior income below 100 percent of poverty.

TABLE 3. DAUGHTER'S WELFARE PARTICIPATION PROBABILITY PRE- AND POST-REFORM
BY MOTHER'S AFDC/TANF PARTICIPATION AND DAUGHTER'S EDUCATIONAL ATTAINMENT

Daughter's welfare participation: Welfare reform timing:	SNAP SSI only		AFDC/TANF only		Both AFDC/TANF and SNAP SSI		Either AFDC/TANF or SNAP SSI	
	Before	After	Before	After	Before	After	Before	After
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No welfare exposure when young	0.064	0.224	0.014	0.005	0.106	0.095	0.185	0.324
Change after reform		0.160		-0.009		-0.011		0.139
Mother participated in AFDC/TANF	0.150	0.440	0.029	0.005	0.413	0.330	0.592	0.774
Change after reform		0.290		-0.025		-0.083		0.181
Selection by educational attainment status conditional on mothers who participated in AFDC/TANF								
Daughter: More than high school	0.051	0.298	0.041	0.000	0.337	0.211	0.429	0.509
Change after reform		0.247		-0.041		-0.126		0.080
Daughter: High school or less	0.179	0.513	0.026	0.007	0.435	0.391	0.640	0.910
Change after reform		0.334		-0.019		-0.044		0.270

Notes: Daughters observed before reform include only those mother-daughter pairs in which neither experiences welfare reform through the daughter's age 27. The after-reform sample is defined by daughters who are observed during the welfare reform era from age 12 onward. Daughter's welfare participation variable is based on any receipt during adult ages 19-27, and mother's welfare participation is based on any receipt when the daughter is aged 12-18. The sample corresponds to the 1254 mother-daughter pairs observed pre-reform and 476 observed post-reform, as in Table 1.

TABLE 4. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION

Daughter's outcome:	AFDC/TANF				AFDC/TANF, SNAP, SSI			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.145 (0.013)	0.268 (0.049)	0.240 (0.021)	0.425 (0.085)	0.226 (0.018)	0.299 (0.073)	0.296 (0.024)	0.369 (0.100)
After welfare reform	0.038 (0.009)	0.069 (0.021)	0.053 (0.017)	0.086 (0.034)	0.002 (0.013)	-0.014 (0.028)	-0.013 (0.020)	-0.050 (0.039)
Mother's participation × after welfare reform	-0.100 (0.015)	-0.183 (0.046)	-0.135 (0.030)	-0.218 (0.083)	-0.041 (0.017)	0.040 (0.074)	-0.017 (0.025)	0.152 (0.105)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes
Weak IV test statistic		23.157		21.969		23.157		22.273
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		1.315		1.384		2.050		2.271
p-value		0.518		0.500		0.359		0.321
Percent change in levels	-69%	-68%	-57%	-51%	-18%	13%	-6%	41%
p-value	0.000	0.000	0.000	0.000	0.011	0.621	0.480	0.266
Percent change over baseline	-46%	-44%	-40%	-32%	-13%	21%	-5%	42%
p-value	0.001	0.029	0.006	0.105	0.084	0.477	0.544	0.257
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

Notes: Robust standard errors with state clustering are shown in parentheses. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF reciprocity rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation (see the online supplement for details). Daughters' PSID core longitudinal weights are used in estimation.

TABLE 5. ROBUSTNESS CHECKS FOR MOTHER'S AFDC/TANF PARTICIPATION EFFECT BY ADDRESSING POTENTIAL LIFE-CYCLE BIAS OR GEOGRAPHIC MOBILITY

Daughter's outcome:	AFDC/TANF							
	Life-cycle				Geographic mobility			
	Mothers aged 25-45; daughters up to age 27		Lee-Solon (2009) age adjustment		Daughter in same state as childhood		Daughter never moves states	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.206 (0.020)	0.457 (0.102)	0.113 (0.010)	0.256 (0.038)	0.167 (0.018)	0.318 (0.071)	0.182 (0.022)	0.421 (0.100)
After welfare reform	0.067 (0.021)	0.115 (0.045)	0.020 (0.008)	0.050 (0.022)	0.044 (0.011)	0.083 (0.031)	0.053 (0.014)	0.116 (0.050)
Mother's participation × after welfare reform	-0.125 (0.033)	-0.216 (0.106)	-0.062 (0.015)	-0.144 (0.049)	-0.117 (0.019)	-0.228 (0.074)	-0.131 (0.025)	-0.312 (0.108)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Weak IV test statistic		18.249		19.560		18.087		13.308
p-value		0.000		0.052		0.000		0.004
Hansen J statistic		2.950		15.844		1.068		0.613
p-value		0.229		0.104		0.586		0.736
Number of daughters	2086	2086	2961	2961	2619	2619	1961	1961
Observations	15718	15718	56068	56068	44131	44131	36404	36404

Notes: See Table 4 notes. Additional controls for Lee-Solon-type age adjustments include a quartic on mother's mean age during prior years of potential welfare participation, a quartic on daughter's current age detrended by 25, and mother's participation indicator interacted with the quartic on daughter's detrended age. Instrumental variables for the Lee-Solon-type estimates additionally include the baseline set of instrumental variables interacted with a quartic in daughter's detrended age.

TABLE 6. MOTHER'S AFDC/TANF PARTICIPATION EFFECT ON
DAUGHTER'S LABOR MARKET AND ADULT FAMILY OUTCOMES, AGES 19 AND OVER

Daughter's outcome:	No earnings		Earnings below 100% poverty		Unmarried or non-cohabiting		Moved states last year	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.126 (0.017)	0.142 (0.059)	0.246 (0.022)	0.352 (0.089)	0.226 (0.027)	0.387 (0.128)	0.000 (0.003)	-0.033 (0.015)
After welfare reform	0.005 (0.013)	-0.009 (0.018)	0.003 (0.020)	-0.014 (0.031)	0.012 (0.023)	0.012 (0.049)	0.008 (0.003)	-0.003 (0.007)
Mother's participation × after welfare reform	-0.013 (0.016)	0.048 (0.049)	-0.038 (0.021)	0.061 (0.086)	0.004 (0.032)	0.050 (0.138)	-0.007 (0.004)	0.028 (0.018)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Weak IV test statistic		23.225		23.225		23.225		23.225
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		1.174		0.396		1.419		0.985
p-value		0.556		0.820		0.492		0.611
Number of daughters	2960	2960	2960	2960	2960	2960	2960	2960
Observations	54496	54496	54496	54496	54496	54496	54496	54496

Notes: See Table 4 notes. For these adult outcome estimates, we restrict the sample to only daughters at least 19 years old with non-missing earnings or marital status.

TABLE 7. MOTHER'S AFDC/TANF PARTICIPATION EFFECT RELATIVE TO
DAUGHTER'S ADOLESCENT OUTCOMES AND EXPOSURE TIMING MECHANISMS

	Daughter's adolescent outcomes				Daughter's AFDC/TANF: Exposure timing mechanisms			
	High school educ. or less		Teenage childbirth		Co-resident exposure	Mother's longest spell		Word-of-mouth
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.259 (0.035)	0.555 (0.182)	0.282 (0.042)	0.722 (0.165)	0.293 (0.063)	0.252 (0.051)	0.386 (0.109)	0.071 (0.022)
After welfare reform	0.047 (0.028)	0.084 (0.059)	-0.012 (0.025)	0.033 (0.058)	0.064 (0.023)	0.050 (0.014)	0.055 (0.016)	0.039 (0.010)
Mother's participation × after welfare reform	-0.012 (0.035)	-0.066 (0.145)	-0.004 (0.042)	-0.047 (0.112)	-0.197 (0.059)	-0.161 (0.045)	-0.280 (0.088)	-0.126 (0.018)
Instrumental variables	No	Yes	No	Yes	Yes	Yes	Yes	No
Daughter fixed effects	No	No	No	No	No	No	No	Yes
Weak IV test statistic		23.157		23.157	19.751	20.545	15.891	
p-value		0.000		0.000	0.000	0.000	0.001	
Hansen J statistic		1.394		2.336	1.920	2.424	4.508	
p-value		0.498		0.311	0.383	0.298	0.105	
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

Notes: See Table 4 notes. Co-resident exposure is restricted to any mother's AFDC/TANF participation while the daughter was living at home and had not yet begun a new family unit through childbirth or otherwise. Mother's longest spell in columns (6) and (7) corresponds to consecutive years of welfare participation during co-residence.