Cumulative Disadvantage and Single-Parent Poverty

Roxana-Diana Burciu[1] & Zachary Parolin[2]

[1] Center for Demographic Studies

[2]Oxford University

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Corresponding author:

Roxana-Diana Burciu

rburciu@ced.uab.es

Abstract: Studies of single-parent poverty generally focus on poverty only after parenthood occurs. In contrast, this study revisits the sources of single-parent poverty through the lens of cumulative disadvantages (CD) that stem from individuals' *family incomes* and *county poverty rates* during childhood. Conceptually, we extend the study of CD with application to single-parent poverty, viewing single parenthood as one mechanism of a broader CD process that connects childhood and adult poverty. Using life-course data from restricted-access Panel Study of Income Dynamics data, we confirm that childhood poverty and county poverty have additive effects on the likelihood of adult poverty, in part channeled through single parenthood. We then introduce a decomposition framework that dissects single-parent poverty into pre-parenthood and post-parenthood conditions. Pre-parenthood disadvantages account for more than two-thirds of the single-parent poverty rate *and* single parents' increased likelihood of poverty relative to two-parent families; in contrast, the event of becoming a single parent accounts for a smaller share of single parents' poverty rate. We conclude that evaluations of single-parent poverty not viewed through the lens of CD are bound to conflate post-parenthood disadvantages with the primary source of single-parents' high poverty rates: adverse childhood conditions associated with strong selection into single parenthood.

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Introduction

Why do single-parent families in the United States (U.S.) experience such high rates of poverty relative to two-parent families? Social scientists have advanced several perspectives on this question, emphasizing either the reduced earnings potential for single-earner families (Kearney 2023; McLanahan and Percheski 2008), the family instability often associated with single parenthood (e.g. Härkönen et al. 2017), or the role of the state (or lack thereof) in supporting the incomes of single parents (e.g. Brady et al. 2017, Maldonado & Nieuwenhuis 2015). Most of these studies, however, examine poverty among single parents only after parenthood occurs, disregarding the poverty trajectory of single individuals (and women, especially) prior to them becoming parents. This study, in contrast, revisits the sources of single-parent poverty through the lens of cumulative disadvantages that stem from individuals' family poverty and county-level poverty rates during childhood.

Specifically, this study has two research objectives. First, we ask: to what extent can single parenthood be understood as a mechanism in a broader cumulative disadvantage process that links childhood poverty to adult poverty? Cumulative disadvantage theory (CD) posits that initial differences in resources between groups can generate persistently widening divergences in resources between those groups across the life-course (Schafer, Ferraro, and Mustillo 2011). In the context of our study, we examine how differences in exposure to poverty in childhood can generate persistent disadvantages in poverty throughout adulthood. Importantly, single parenthood can be conceptually understood as a mechanism in that broader CD process if (a) there exists strong selection into single parenthood among adults from disadvantaged backgrounds and (b) single parenthood perpetuates income disadvantages in adulthood. That single parents tend to be less educated is well-documented in the literature (Harkness 2022; Hubgen 2020; McLanahan 2009; Zagel 2014); however, the extent to which these selection effects shape poverty rates of single parents (in general and relative to two-parent families) has

rarely been addressed (see Geroninus and Korenman 1992; Hoffman, Foster, and Furstenberg 1993; Musick and Mare 2004 for exceptions).

This leads to our second objective: if single parenthood is part of a CD process, to what extent can CD explain single parents' poverty *rates* (i.e. the proportion of single parents at a given time who are in poverty) and their poverty *penalty* (i.e. the percentage-point difference in poverty rates for single parents versus partnered parents) relative to two-parent families? We introduce a decomposition framework that segments single-parent poverty into three main dimensions: (1) pre-parenthood poverty stemming from CD, (2) poverty driven by income losses after parenthood, and (3) the role of taxes and transfers in reducing poverty. While the former two dimensions are commonly studied in analyses of single-parent poverty rates (Brady, Baker, and Finnigan 2024; Kearney 2023), the first one is largely ignored, in part due to studies' reliance on cross-sectional data. We incorporate this third dimension so that its influence in shaping single-parent poverty rates can be directly compared to the other, more-frequently studied dimensions. More broadly, we advance an understanding of single-parent poverty that moves beyond the evaluation of observable, cotemporaneous risks factors such as marital status or employment.

We pursue these research objectives using a restricted-access version of the Panel Study of Income Dynamics (PSID) covering 1970-2019. We analyze the extent to which *childhood poverty exposure* and *county poverty while young* influence selection into single parenthood and poverty in adulthood. We find that greater exposure to poverty during childhood leads to compounding disadvantages for adults' incomes, leading to a 'strict CD' form of persistently-widening income gaps over the life-course. Moreover, we document that single parenthood is one mechanism in this CD process.

Moreover, our decomposition analysis finds that pre-parenthood disadvantage explains 80 percent of the single-parent poverty *rate*, and 63 percent of the single-parent poverty *penalty.*

In contrast, the income decline of single parents after childbirth explains 44 percent of the single-parent penalty.

Our analysis shows that evaluating single-parent poverty without considering the effect of CD are bound to conflate post-parenthood disadvantages with adverse childhood conditions that generate strong selection into single parenthood. In the case of single parents, the most important source of disadvantages, childhood poverty, pre-dates parenthood and family formation.

Background

Poverty and Single Parenthood

Few demographically-defined groups have received as much attention across the social sciences as single parents. Statistically, single mothers are far more likely to be in poverty compared to married mothers (Brady, Finnigan, and Hübgen 2017; Kearney 2023; McLanahan and Percheski 2008; Moullin and Harkness 2021).

Scholars have regularly debated the primary sources of single parents' higher poverty rates. On one hand, the decline of the two-parent family is linked to increases in inequality and poverty among children (McLanahan 2004, 2009), largely due to their reduced earnings potential compared to two-parent families (Kearney 2023; McLanahan and Sandefur 1994). This lack of resources associated with the absence of a parent have negative consequences for children (McLanahan and Percheski 2008). Thus, one way to decrease poverty is for young women to postpone fertility until they find a suitable partner (McLanahan 2004), or to restore the norm of two-parent families among the economically disadvantaged (Kearney 2023).

Critics of this family-structure-focused explanation to single-parent poverty argue that the analytical emphasis should instead be on the role of the state (Baker 2015; Lang and Zagorsky 2001; Nieuwenhuis and Maldonado 2018). Generous child benefits, access to childcare, and more generally a generous welfare system can substantially alleviate poverty

among single parents (Aerts, Marx, and Parolin 2022; Brady and Burroway 2012; Gornick, Maldonado, and Sheely 2022; Maldonado and Nieuwenhuis 2015).

However, each of these perspectives – whether emphasizing family structure, employment, or the role of the state in reducing the association of family structure with poverty – tends to focus exclusively on post-parenthood outcomes and rarely account for disadvantages that may have pre-dated parenthood. Put differently, studies tend to evaluate group differences in poverty by focusing only on characteristics *after* the single adult has had a child. In doing so, these studies largely overlook the role of pre-parenthood conditions that may generate large selection into single parenthood and, in turn, poverty. To be sure, scholars have acknowledged that single parents tend to have lower levels of education and higher poverty rates even before having children (Harkness 2022; Hubgen 2020; Kearney 2023; McLanahan 2009). Yet, this standard acknowledgement of selection effects still lacks (1) appropriate theorization of how pre-parenthood disadvantages should be understood when considering single-parent poverty and (2) an analytical framework that distinguishes between pre- and post-parenthood outcomes in explaining single-parent poverty.

Cumulative Disadvantage

Conceptually, we propose that single parenthood – as a family structure defined by the presence of one parent in a household with at least one dependent child under the age of 18 and no other co-residing adults – can be viewed as one mechanism in a cumulative disadvantage (CD) process that ensures that children born into poor families and/or counties remain poor in adulthood. Cumulative advantage (CA, the inverse of CD) is a process in which conditions or events from earlier points in an individual's life will influence future developments and create divergence between those who experience the condition and those who do not (Schafer et al. 2011; Dannefer 2003). Given that we focus on persisting *disadvantages*¸ we use the CD

labeling, but our subsequent discussion could be equally interpreted through the lens of CA (DiPrete and Eirich 2006).[1]

A CD process can be shaped by social systems that generate inequality and manifest at demographic and developmental levels over the life-course (Ferraro and Shippee 2009). This underlines that inequality and poor life outcomes are structurally generated, sometimes even before the individual is born. In this context, childhood conditions become fundamental to adult well-being, making the family an important channel of transmission of advantages or disadvantages (Schafer et al. 2011).

In their review of CD processes, DiPrete and Eirich (2006) distinguish between two types of commonly studied CD: (1) "strict CD," in which small initial (dis)advantages between individuals or groups of individuals are magnified with time, making it difficult for those who are behind at some point to catch up; and (2) a status-attainment version of CD, typified by Blau and Duncan (1967). In this less-strict version of CD, a status variable has a persistent effect on the life-course outcomes of an individual. This approach does not imply increasing divergence over time (as does strict CD), but a stable difference between groups based on a status variable that has both direct and indirect effects on life outcomes.[2]

Past research occasionally accounts for negative selection into single parenthood by controlling for a variety of family background characteristics (McLanahan and Sandefur 1994) or the use of sibling comparisons (Geroninus and Korenman 1992; Hoffman et al. 1993). Our CD framework encompasses negative selection but also gives greater emphasis to (1) the possibility of persistent and widening consequences of childhood poverty across an individual's

[1] We acknowledge that there is some space for nuance in this claim (Ferraro and Shippee 2009). *Advantages* are exposure to opportunities and the lack of exposure to risks, while *disadvantages* are exposure to risk and the lack of exposure to opportunities. A child who is born in a disadvantaged family may be different from an advantaged child not only because she does not have the same economic resources, but also because she might be exposed to food and housing insecurity, an experience that the child with wealthier parents will not have.

[2] In a practical example of how this type of CD reinforces group differences, Blau and Duncan (1967) investigated racial disparities in economic outcomes and concluded that Black men have a cumulative disadvantage compared to White men because their racial belonging directly and indirectly affects their life-course outcomes, such as educational opportunities, occupation, and social standing.

life-course and (2) explicit accounting of the extent to which pre-parenthood disadvantages explain post-parenthood poverty rates (in general and relative to two-parent families).

We study how family poverty during childhood *and* county-level poverty additively generate a CD process that shapes (1) the likelihood of single parenthood and (2) disparities in adult poverty outcomes. We ask two research questions. First, to what extent can single parenthood be understood as a mechanism in a broader CD process that links childhood poverty to adult poverty? In broad terms, this first objective focuses on whether childhood disadvantages affect the likelihood of group formation and, in turn, later-life disadvantages. Second, to what extent can CD explain the single-parent poverty *rate* and poverty *penalty* relative to two-parent families*?* This second question is interested in whether group differences in poverty are primarily attributable to disadvantages that pre-date single parenthood.

Single Parenthood and Cumulative Disadvantage

Figure 1 outlines our conceptual framework for viewing single-parent poverty through the lens of CD.

[Insert Figure 1 here]

Pathway A in Figure 1 represents the association of childhood circumstances (in this case, childhood poverty and county poverty) with one's likelihood of poverty in adulthood. As noted, we evaluate the potential for childhood and county poverty to have additive, unfavorable effects on adult poverty status. We do not adopt an *a priori* perspective on whether we should expect these childhood conditions to affect adult poverty in a *strict CD* manner (so that more-disadvantaged individuals see steadily increasing likelihood of poverty relative to less-disadvantaged individuals across the life-course) or a Blau-Duncan-type status-attainment model, in which childhood circumstances directly and indirectly affect adult circumstances, though not in a compounding manner; instead, we empirically test for both types of CD. Several mechanisms may connect childhood economic circumstances and adult poverty, including

family investment, parental education, schooling quality, job opportunities, role models, cultural influences, and structural factors (DiPrete and Eirich 2006; Parolin et al. 2024).[3]

Pathway B focuses on how CD affects group formation. In our case, this represents the association of childhood and county-level poverty with the likelihood of becoming a single parent. Within our CD framework, single parenthood is essentially a mechanism (or *mediator*) in a broader CD process that connects childhood to adult circumstances. Growing up in poverty can influence single parenthood in several ways. As one example, low childhood incomes are associated with lower likelihood of having access to contraceptives and receiving sex education (Cha and Weitzman 2023). Moreover, women from lower-income backgrounds have lower levels of contraceptive use, less trust in family planning services, and limited access to quality family planning compared to women from higher-income backgrounds (Cha and Weitzman 2023; Guzzo and Hayford 2020). Given that child poverty is linked to lower educational attainment and more union instability in adulthood (Engle and Black 2008), accumulated poverty increases the likelihood of unintended births and single parenthood (Guzzo and Hayford 2020).

Growing up in poor counties can also increase the likelihood of single parenthood. Poor areas often lack role models for stable relationships, making early and out-of-wedlock pregnancy more socially accepted (Brooks-Gunn et al. 1993; Cha and Weitzman 2023). Limited access to stable employment for men makes them less attractive on the marriage market and leads women to choose to raise children alone (Edin and Kefalas 2011). Additionally, fewer institutional resources reduce exposure to medical professionals who provide crucial information on sex and contraception (Cha and Weitzman 2023; Sharkey and Faber 2014). Given this evidence, we expect that both childhood and county poverty increase the likelihood

[3] Our goal is not to fully explain the intergenerational transmission of poverty and as a result, in this paper, we focus on family structure as one such mechanisms while recognizing the importance of other contributing factors.

of becoming a single parent; if so, one might view single parenthood as an outcome of early disadvantage and potentially a consequence of poverty, rather than (or in addition to) a cause.

Pathway C (inclusive of C_{pre} and C_{post}) in Figure 1 represents the association of single parenthood with poverty before accounting for government taxes and transfers (*pre*) and after accounting for taxes and transfers (*post)*. Most of the research on single-parent poverty focuses solely on this relationship, effectively ignoring Pathways A and B. Scholars studying the income penalty associated with single parenthood tend to focus on C_{pre}, while scholars emphasizing the role of taxes/transfers tend to focus on C_{post} - C_{pre}. We expect to find single parenthood is associated with higher likelihood of poverty (before or after taxes/transfers), consistently with nearly all prior literature (e.g. Brady et al., 2017; Kearney, 2023; McLanahan, 2009).

Data & Methods

Data

In our analysis we rely on restricted access data from the Panel Study of Income Dynamics (PSID), a longitudinal data set that follows the same U.S. households between 1969 and 2019. The PSID provides data on household- and individual-level variables and has been used for past research on family structure and poverty (Parolin et al. 2022). This allows us to identify transitions into (single) parenthood and union dissolutions, but also individual outcomes, such as education or employment. The restricted-access version allows us to identify the counties in which persons live, allowing us to produce estimates of county-level poverty rates during childhood.[4] Our samples contain all parents who are the household head or the partner of the household head. We use two different samples for our analysis. In studying the cumulative disadvantage process, the analysis is year-specific, while the sample in the

[4] In practice, we use county-level poverty rates in our baseline analysis, given that Census tract poverty rates are not consistently available back to 1970. In years for which both are available, we find very strong and positive correlations between Census tract and county poverty rates.

decomposition analysis is pooled across all years. We explain in detail how each sample is created in the next sections.

We define single parenthood as an adult individual (regardless of their gender) who lives alone with their minor children, in line with other approaches in the literature (Brady et al. 2017). This definition excludes cohabitation as a form of single parenthood, in line with previous research (Brady and Burroway 2012; Kennedy and Fitch 2012; Moullin and Harkness 2021). This definition includes all pathways into single parenthood (divorced, separated, widowed, and never married) to engage with the literature that acknowledges diverse pathways into single parenthood (Burciu and Parolin 2024); however, we recognize that pathways into single parenthood may shape poverty outcomes in different ways and we provide alternative results in Appendix B.

Measures & Sample for Cumulative Disadvantage Analyses (Research Objective 1)

In studying whether single parenthood is part of a CD process, and how childhood and place of residence poverty conditions influence that process, we need the following indicators: exposure to poverty during childhood (defined here as birth through age 17), local poverty rates during childhood, and poverty rate in adulthood (defined here as ages 25 to 45 to capture the post-education but core-working-age lifespan of most individuals in our sample[5]). We measure poverty during childhood and adulthood directly in the PSID, imposing a sample restriction that an individual must be observed at least five (non-consecutive) times throughout childhood in the PSID, and at least five (non-consecutive) times during the age 25-45 period, to provide reliable estimates of poverty.[6] The sample size given the restrictions above amounts to 59,754 observations from 6,167 unique respondents (of which 57% of are women).

[5] We make this analytical choice because we wish to observe poverty outcomes at a consistent age for all parents in our sample, regardless of their family structure. Moreover, including poverty at ages 18-24 captures the poverty at a transition period, which is not the goal of this paper. We expand the age range to 55 years old in Appendix F.
[6] We provide alternative results that relax these inclusion criteria in Appendix E.

We apply post-tax/transfer measures of income (using the Cross-National Equivalent File) and a relative poverty threshold set at 50 percent of national equivalized annual median income.[7] We adjust household incomes with the square root equivalence scale (Smeeding 2016). We also use a continuous measurement of resources that captures the income-to-needs ratio, which allows us to assess changes across the income distribution beyond a binary poverty status indicator[8]. To measure county poverty rates, we import data from the decennial U.S. Census files, which offer county-level poverty rates each decade from 1960 through 2010.[9]

Measures & Sample for Decomposition Analysis (Research Objective 2)

Our decomposition of the single-parent poverty rate builds off our CD sample. In the decomposition analysis, we compare single parents to partnered parents before and after their families have their first child. Our 'treatment group' of single parents includes parents who live alone with their children for at least 2 waves of data collection before their oldest child turns 10.[10] The 2-year restriction ensures single parenthood is not just a temporary status or measurement error.[11] While many parents experience single parenthood at some point, it is often its cumulative duration that significantly impacts poverty (Brown 2006; Harcourt and Adler-Baeder 2015; Zagel 2023). Our measure has the added advantage of not relying on cross-sectional snapshots, considering past and future family structures (Cross 2020).

[7] The Supplemental Poverty Measure (SPM) is not generally available in the PSID. The official poverty measure, meanwhile, does not include near-cash and tax-based transfers, and is thus well-regarded as an incomplete measure of poverty. Accordingly, we do not use it this study. Alternative results using an absolute measure of poverty are presented in Appendix J.

[8] Evaluating income relative to the poverty threshold provides a more comprehensive understanding of how cumulative disadvantages shape the trajectory of income growth and encompasses income disparities above the poverty threshold, unlike our primary outcome variable (binary poverty).

[9] This is preferable to estimating local-level poverty rates directly from the PSID, given that the sample composition of each county is not representative of the county's population.

[10] We only include the parenthood status of an individual relative to their oldest child to ensure that parents cannot be categorized as single for one child and not single for other children. For observations after 1997, when the PSID started collecting data biannually, this restriction becomes two waves of data collection rather than two years.

[11] Appendix B tests alternative definitions, including those single at birth and those single for at least one, five, or all years before their child turns 10.

Parents who are not living alone with their children (partnered parents) form our reference group. Recall from our single parenthood definition that parents who co-reside with adults other than their partners are not included in our sample.

As we explain later, we apply event-study-type estimates that require stable treatment and comparison groups. Thus, single parents who meet these conditions form the treatment group, and we will evaluate their outcomes both before and after becoming parents.

Treatment Timing: We consider the year of birth of the oldest child in the household as the treatment in our analysis (i.e. when the adults become parents). For the event-time-like analysis, as well as the decomposition, we restrict our sample to individuals who are observed for at least 2 years before and after the treatment to ensure that we can adequately measure pre- and post-treatment outcomes.

We measure pre- and post-tax/transfer poverty using the same concepts as in the CD sample described previously. We separate poverty rates into childhood and adulthood as before, but also distinguish between a *post-treatment poverty rate*, defined as the poverty outcomes of adults in either our treatment or comparison group for the 10 years after having a child; and a *pre-treatment poverty*, as the poverty outcomes of individuals for the 10 years before they have a child.

Given our focus on poverty during longer timespans before and after childbirth, we expand the sample relative to our CD sample. The decomposition sample consists of parents from 10 years before the birth of their first child to 10 years after the first of their first child. We exclude the year 1969 because of the lack of information on a range of key variables.[12] We also exclude adults who are childless throughout the time they are observed in the PSID from our decomposition sample. This sample contains 166,389 observations from a total of 13,131 distinct individuals, a sample larger than the one used for research objective 1, given that the 5-

[12]This sample selection is conducted after we construct the relative poverty measure. The full sample is used to define the median income and poverty status.

years restriction of observations in childhood and adulthood does not apply here. We apply the cross-sectional PSID sample weights in all analysis to ensure sample representativeness (results are consistent when applying longitudinal weights).

Methods

Our methodological framework proceeds in two steps, in line with our two research objectives. First, we evaluate whether single parenthood is part of a CD process, following the conceptual framework depicted in Figure 1. Second, we then build on the initial findings to identify what share of the single-parenthood poverty should be attributed to pre-treatment CDs, as opposed to post-treatment outcomes, taxes, transfers, and more.

Is Single Parenthood Part of a Cumulative Disadvantage Process? (Research Objective 1)

First, we will use OLS regression models to test the empirical associations between childhood and county poverty with adult poverty (Pathway A in Figure 1), as formalized in Equation 1.

$$AdultPov_i = \beta_1 ChildPov_i + \beta_2 CountyPov_i + C_i + \epsilon \quad (1)$$

The model in Equation 1 estimates β_1 as the association between childhood poverty and adult poverty, and β_2 as the association between county poverty during childhood and adult poverty. The estimation includes a vector of controls C_i for oldest age observed in the sample, sex, year fixed effects, and dummies for the total number of adult years observed in the PSID. Given that county poverty and childhood poverty are moderately, positively correlated (r = 0.30), we also provide results where we include each individually before including them in the same model together.

The second step in testing the CD process is determining if the initial disadvantage associated with childhood circumstances worsens across the life-course (DiPrete & Eirich, 2006). This would indicate a 'strict' CD process, rather than a simpler status-attainment version of CD. To do this, we estimate the increase in poverty as individuals get older, as formalized in Equation 2:

$$AdultPov_{ij} = \beta_1 ChildPov_i \times Age_i + \beta_2 CountyPov_i \times Age_i + C_i + \epsilon \quad (2)$$

The outcome variable is now the poverty status in the given year of adulthood. By including an interaction between child and place of residence poverty and a linear age term, we empirically test for a strict-CD process in which initial poverty disadvantages increase across the life-course. If β_1 is positive, it suggests that the consequences of exposure to childhood poverty worsen across one's life-course in adulthood (similarly for β_2 as the estimation of the association between county poverty and adult poverty). We apply the same logic to the continuous measure of income relative to poverty line.

We then bring single parenthood into the analyses. First, we replicate Equations (1) and (2) but when using a binary indicator of whether the adult is a single parent in place of the childhood poverty indicators, while the outcome remains adulthood poverty status (or, separately, income relative to the poverty line). These analyses provide a first indication of whether any CD process we observed based on childhood poverty is mirrored when substituting single parenthood as the independent variable. We then connect the link between childhood circumstances and single parenthood (see Pathway B in Figure 1, the association of childhood and county poverty with family structure). To do so, we estimate the likelihood of becoming a single parent based on the time spent in a poor family and a poor county in childhood. The regression follows the model in equation 3:

$$SingPar_i = \beta_1 ChildPov_i + \beta_2 CountyPov_i + C_i + \epsilon \quad (3)$$

In Equation 3, the likelihood of ever becoming single parent, $SingPar_i$, is a function of childhood and county poverty, while considering a vector of controls, C_i that includes year fixed effects, age, gender, and the number of years observed in the PSID during the age 25-45 range. β_1 and β_2 tell us the increased likelihood of becoming a single parent associated with more of childhood spent in poverty and living in a poor county. Recall that we define single parenthood as an adult who lives alone with their minor children. For this equation, we calculate whether an individual is complying with this definition for at least one wave of data collection.

These initial results will inform us, in short, whether family and place of residence poverty during childhood have additive effects on adult poverty, and whether the disadvantages associated with family and county poverty worsen across the life-course. Moreover, the results will indicate whether single parenthood may be a mechanism in this cumulative disadvantage process and, specifically, the extent to which family and county poverty in childhood are associated with the likelihood of becoming a single parent.

How Does Cumulative Disadvantage Explain Single-Parent Poverty? (Research Objective 2)

Should single parenthood be a mechanism in a cumulative disadvantage process, then attempts to explain poverty among single parents must consider the economic circumstances that pre-date parenthood (such as poverty when the individual was young). The decomposition framework we present below builds off our primary analyses with the intent of dissecting the single-parent poverty rate and the single-parent poverty penalty into *cumulative disadvantages* (Pathways A and B from Figure 1), *child income penalty* (Pathway C_{pre}) and the *role of taxes/transfers* (Pathway C_{post}). Figure 2 documents the logic of our decomposition framework. Recall that in all the following analysis, the reference category – or the control group – is made up of partnered parents.

[Insert Figure 2 here]

We use eight distinct poverty rates to inform our decomposition: *post*-tax/transfer poverty rates *before* childbirth for the partnered-parents group (labeled "A" in Figure 2) and single-parent group ("C"); *pre*-tax/transfer poverty rates *before* childbirth for the partnered-parents ("B") and single-parent ("D") groups; *post*-tax/transfer poverty rates *after* childbirth ("E" for partnered-parents and "G" for single-parent group); and *pre*-tax/transfer poverty rates *after* childbirth ("F" for partnered-parents and "H" for single-parents group). Note that line G – post-tax/transfer poverty for single parents after childbirth – is the single parent poverty rate, which we decompose using information from the other seven rates; the difference between G and E is the additional penalty for single parents.

Specifically, we use these poverty rates to decompose the post-tax/transfer poverty rate for single parents into five distinct sources: (1) the effect of taxes/transfer in reducing poverty for two-parent families with children (line E minus F); (2) the additional poverty-reduction effect of taxes/transfers for single-parent families beyond that provided for two-parent families (line G minus H, minus the effect for two-parent families described previously); (3) the child income penalty, or increase in pre-tax/transfer poverty rate for having a children for two-parent families (F minus B); (4) an additional child income penalty for having a child for single parents (H – D, minus the penalty described for two-parent families); and (5) pre-treatment poverty for parents who eventually become single (line D). This final source is our proxy of cumulative disadvantage, and we anticipate that higher pre-child poverty rates among individuals who become single parents can largely explain post-child poverty rates among single parents.

Following the notations of our eight measures, one can confirm that:

$$\underbrace{G}_{\substack{Single\\ Parent\\ Poverty}} = \underbrace{(E-F)}_{\substack{Taxes\ and\\ Transfers,\\ All\ Parents}} + \underbrace{(G-H)-(\mathrm{E}-\mathrm{F})}_{\substack{Extra\ Taxes\ and\\ Transfers,\\ Single\ Parents}} + \underbrace{(\mathrm{F}-\mathrm{B})}_{\substack{Child\ Income\\ Penalty,\\ All\ Parents}} + \underbrace{(\mathrm{H}-\mathrm{D})-(\mathrm{F}-\mathrm{B})}_{\substack{Additional\ Child\ Income\\ Penalty,\\ Single\ Parents}} + \underbrace{\mathrm{D}}_{\substack{Pre-Parenthood\\ Disadvantage,\\ Single\ Parents}} \quad (4)$$

Note that these three broad explanations (taxes/transfers, child income penalty, and pre-treatment disadvantage) align with the three pathways in the conceptual framework we put forth in Figure 1. Should our hypothesis that cumulative disadvantage is a dominant driver of single-parent poverty, line D (the pre-treatment poverty rate of individuals who become single parents) will carry a particularly large weight among the five sources. Instead, should being a single be the dominant driver of single-parent poverty, then the 'additional child income penalty for single parents' should be the dominant component. Note that the 'additional child income penalty for single parents' is the equivalent of most estimations of single-parent poverty from the literature. In Appendix G, we further link the pre-treatment poverty rate (line D) to our direct indicators of cumulative disadvantage, namely exposure to childhood poverty and higher county poverty during childhood.

The calculation of the single-parent poverty *penalty* (the post-treatment poverty rate for single parents compared to two-parent families) simply involves the differences among several components above:

$$\underbrace{G-E}_{\substack{Single\\Parent\\Penalty}} = \underbrace{(G-E) - (\mathrm{H}-\mathrm{F})}_{\substack{Tax\ and\ Transfer\\Effect\ for\ Single\\Parents\ vs.\ Two\ Parent}} + \underbrace{(\mathrm{H}-\mathrm{D}) - (\mathrm{F}-\mathrm{B})}_{\substack{Child\ Income\\Penalty\ for\ Single\\Parents\ vs.\ Two\ Parent}} + \underbrace{(\mathrm{D}-\mathrm{B})}_{\substack{Pre-Parenthood\\Disadvantage\ for\\Single\ Parents\ vs.\\Two\ Parent}} \quad (5)$$

The difference between the post-tax/transfer poverty rate of single parents minus that of partnered-parents is equal to the poverty-reduction effect of taxes/transfers for single parents relative to partnered parents, plus the differences in the pre-tax/transfer poverty increase after childbirth relative to before childbirth, plus the differences in pre-treatment pre-tax/transfer poverty disadvantages. Here, we are particularly interested in understanding how the pre-treatment poverty differences compare to the increase in poverty due to childbirth, or the role of taxes/transfers, in explaining poverty rates for single parents compared to partnered parents.

Findings

Descriptive Findings

Table 1 provides descriptive information on the relationship between childhood poverty and county poverty with our primary adulthood outcomes (single parenthood, and adult poverty). For this descriptive table, we segment the child and county poverty distributions of our sample into three equal-sized groups, naming these *high*, *medium*, and *low* poverty.

[Insert Table 1 here]

Among the third of our sample who experience low childhood poverty, the average poverty rate in adulthood was 8 percent, while 8 percent of such adults (and 14 percent of women) became single parents. These rates gradually increase when advancing to the medium- and high-child-poverty groups. The medium-child-poverty group spent an average of 15 percent of their childhoods in poverty; the average poverty rate in adulthood among this group was 13 percent, while 12 percent overall (and 20 percent of women) became single parents. In the

highest-poverty group (mean of 66 percent childhood poverty exposure), the average adult poverty rate was 28 percent, while 22 percent of the group (and 38 percent of women) became single parents. In short, more time in childhood spent in poverty is associated with higher likelihood of becoming a single parent and higher likelihood of adult poverty.

The bottom half of Table 1 shows similar gradients when focusing on county poverty during one's childhood. The higher the county poverty exposure during childhood, the higher the percentage of adults who experience poverty and who go on to become single parents.

Single Parenthood and Cumulative Disadvantages (Research Objective 1)

We now turn to our first research objective, investigating how single parenthood fits into a broader CD process that influences adult poverty status. Table 2 presents results of how childhood and county poverty are associated with adult poverty, and whether these early exposures to poverty generate a 'strict CD' process of persistently-widening disparities (Pathway A of Figure 1). The top half of Table 2 focuses on our binary poverty outcome, while the bottom half employs the continuous income-to-needs ratio.

Column A shows that an individual experiencing all of her childhood in poverty is 41.9 percentage points more likely to be poor in adulthood relative to an individual who experiences no childhood poverty, and has an income-to-needs ratio of 2.06 points lower. Column B finds similar results when substituting child poverty with county poverty: the poverty disadvantage in adulthood amounts to 38.8 percentage points, and a 2.88-point penalty in the income-to-needs ratio. Column C adds both indicators into the same model; the strength of the association for either declines somewhat compared to Columns A and B, as expected given the moderate ($r = 0.30$) correlation between childhood and county poverty. However, both forms of poverty remain positively associated with adult poverty and negatively associated with the adult income-to-needs ratio, suggesting that family- and county-level resources have additive influence on adult poverty. This further validates our inclusion of the place-level poverty indicators to the study of CD.

[Insert Table 2 here]

Column D explicitly tests whether childhood and county poverty while young generate a 'strict CD' process in widening resource differences across the life-course. Strict CD is only evident when examining how childhood poverty exposure affects the evolution of one's income relative to the poverty line across the adult life-course. We do not find significant effects for a strict CD process related to county poverty (at least while conditional on childhood poverty), and we find a reversion to the mean when studying the association between childhood poverty status and trends in the binary adult poverty outcome.[13] Thus, while Columns A through C unambiguously suggest the existence of CD in the Blau-Duncan status-attainment manner, evidence of the stricter version of CD is present only when studying income disparities beyond the poverty line. In all cases, though, we find that child poverty generates sustained – and sometimes compounding – disadvantages in adulthood poverty and resources.

Table 3 now brings single parenthood in the study, focusing on Pathway B of Figure 1 (the association of childhood and county poverty with becoming a single parent).

[Insert Table 3 here]

Table 3 documents that full exposure to childhood poverty increases one's likelihood of becoming a single parent by 22.3 percentage points compared to an individual who experiences no childhood poverty. Moreover, Column B shows that greater county poverty during childhood is also associated with a higher likelihood of single parenthood; however, this effect diminishes and switches signs when included simultaneously with childhood poverty in Column C (which sees an increase in its conditional association to 23 percentage points). Thus, family-resources while young appear to carry the greater influence of the two and demonstrate clear evidence of selection into single parenthood based on childhood poverty status.

[13] The different directions of strict CD effects for poverty and income-to-needs is not necessarily surprising given that different properties of the two indicators. The binary poverty outcome experiences downward convergence across the life-course, but incomes above the poverty line further diverge across the life-course.

[Insert Table 4 here]

In Table 4, we present the association of single parenthood with adult poverty, or Pathway C in Figure 1. Confirming most results in the literature, single parenthood is associated with higher poverty rates in adulthood (a 23.7 percentage point increase), and a lower income-to-needs ratio (a 1.14-point disadvantage). Columns B and D study whether single parenthood has CD properties consistent with our childhood and county poverty indicators. As in Table 2, focusing on binary poverty status suggests reversion to the mean (see the negative, significant interaction of single parenthood with the linear age trend in Column B), but focusing on the continuous income-to-needs ratio (Column D) suggests widening income gaps across the adult life-course for single parents relative to other individuals. The consistency of these patterns with the CD evidence presented in Table 2, and the evidence of strong selection into single parenthood in Table 3, support our claim that single parenthood is a mechanism in a broader CD process that connects childhood disadvantages to adult poverty.

Does Cumulative Disadvantage Explain Single-Parent Poverty? (Research Objective 2)

To what extent can CD explain single parents' poverty *rates* and their poverty *penalty* relative to two-parent families? We now turn to this question, which is central to our second research objective.

[Insert Figure 3 here]

Figure 3 presents the pre- and post-childbirth poverty trends for individuals who become single parents versus those who do not. This figure mirrors the stylized example presented in our *Methods* section and is used to inform our subsequent decompositions of the single-parent poverty rate and penalty. The descriptive trends in Figure 3 show that single parents have consistently higher poverty rates compared to non-single parents, even during the 10 years before the birth of their first child. On average in the pre-treatment period, the single-parent group has a post-tax/transfer poverty rate that is around 15 percentage points greater than that of the partnered-parents.

The difference in poverty increases with childbirth: five years after the birth of a first child, for example, the post-tax/transfer poverty rate of single parents is nearly 30 percentage points higher than the partnered parents. Taxes and transfers only slightly improve the gaps between the two groups relative to pre-tax/transfer poverty gaps. These descriptive trends thus suggest that all three previously-discussed perspectives on single-parent poverty are at play: increases in poverty at childbirth, driven by larger income losses; some offsetting effect of taxes and transfers; and, uniquely documented in this study, a strong pre-treatment poverty disadvantaged for the individuals who become single parents.

To better understand the weights of these different contributions, Figure 4a presents our results of the decomposition analysis for the single-parent poverty rate.

[Insert Figure 4 here]

The average poverty rate of single parents (after childbirth) in our sample is 42 percent, as indicated by the orange bar on the right side of Figure 4a. The preceding components add up to that 42 percent, following Equation 5. Two components stand out: the pre-treatment disadvantages of single parents (explaining 34 points of the overall 42 percent) and the extra increase in pre-tax/transfer poverty rates that single parents experience after childbirth relative to two-parent families (explaining 12 points of the overall 42 percent). The pre-treatment poverty status of single parents clearly stands out: it explains 81 percent (34 p.p. / 42 p.p.) of the overall post-treatment poverty rate of single parents. Taxes and transfers contribute marginally but do not come close to offsetting the pre-treatment disadvantages or post-childbirth income losses.

Figure 4b switches focus from the poverty *rate* of single parents to their *penalty* relative to the post-treatment poverty rate for partnered parents (following Equation 6). On average, single parents were 27 percentage points more likely to be poor than partnered parents after each group had its first child (see right-most bar of Figure 4b). The most important contributor to this higher poverty rate is the pre-treatment disadvantage of single parents: at 17 percentage

points, pre-treatment disadvantages explain 63 percent of the single-parent penalty. In contrast, the larger income losses for single parents after childbirth explain 12 percentage points (or 44 percent of the overall disadvantage).

In Appendix Table G1, we further link the estimation of pre-treatment disadvantages to our main indicators of CD: child poverty and county poverty. Applying a Fairlie decomposition to analyze the sources of pre-childbirth variation in poverty rates among the group that becomes a single parent, versus the group that does not, we find that the childhood and county poverty together explain 52 percent of such variation (8.7 percentage points of the overall 17 percentage point disadvantage). In other words, exposure to poverty during childhood explains the majority of the "pre-treatment disadvantage" component.[14] We can also abstract further: given 63 percent of the single parent poverty penalty is attributable to pre-treatment disadvantages (see Figure 5), and 52 percent of pre-treatment disadvantages for the treatment group are attributable to childhood poverty (computed above), we can deduce that exposure to poverty during childhood alone explains approximately 33 percent (0.63 * 0.52) of the single-parent poverty penalty, comparable to the share explained by income penalty that single parents face after childbirth. Thus, regardless of whether one focuses on the full set of pre-treatment disadvantages, or our core CD measures of exposure to childhood and county poverty specifically, our evidence suggests that the poverty status of single parents *before they actually gave birth* explains more of the single-parenthood poverty rate, and the poverty penalty relative to two-parent families, than single parenthood.

Sensitivity Tests & Alternative Results

[14] While fully explaining pre-treatment disadvantages is beyond the analytical scope of this paper, past literature suggests that other characteristics of a child's family (parental education, occupation, wealth, and more) may affect disadvantage independent of childhood poverty status (McLanahan and Sandefur 1994).

We perform a series of sensitivity analyses to assess the robustness of our results. First, in our main analysis we present results that categorize single parents as such if they have been the only adult in the household with their children for at least two years. In Appendix B, we present results of our decompositions using alternative measures for single parenthood. We use three stricter definitions: one that requires parents to be single the year their oldest child is born, one that requires them to be single for at least 5 years before their child turns 11 years old, and one that requires them to be single for the entire observed period between the birth of their child and the year when the child turn 11 years old. We then relax the conditions and consider single parents as all individuals who are the only adult in a household with a child younger than 11 years old for at least one year. Results are similar, but show that the more stable the single parenthood, the greater the contribution of pre-treatment disadvantages to the poverty rate and penalty. By restricting the sample to individuals who are single parents for the whole period, we also remove the potential diluting effect of parenthood transitions (such as repartnering) on the estimations in the main results.

We have adopted a gender-neutral approach towards our labeling of single parenthood throughout this paper; however, in reality, a majority of single parents in the US and in our sample are women. Single mothers are more vulnerable to poverty than single fathers (Edin and Kissane 2010). For this reason, in Appendix C we replicate our decompositions exclusively on a sample of women. Results are similar but support the fact that single mothers have higher poverty rates and penalties compared to our sample that includes single fathers.

We also consider different ways of measuring poverty. In Appendix D, we replicate our decompositions analysis using a poverty threshold set at 40 percent the yearly median equivalized income, at 60 percent the yearly median equivalized income, and at 50 percent the 2019 median income adjusted for inflation. Results are comparable with each measure. In Appendix J we use an absolute measure of poverty, similar to the OPM.

In Appendix E we replicate our CD analysis by relaxing the restriction that requires individuals to be observed for at least 5 years in childhood and adulthood to be included in our sample. We first present alternative results that have no such restriction, and then alternative results with a restriction of 3 years. Results are similar. We extend our samples to adults of ages 25 to 55, rather than ages 25 to 45, for our CD analyses in Appendix F. Results are similar.

Appendix H displays results segmented by race/ethnicity. We find that the single parent poverty rate among Black individuals is 25 percentage points (pp) higher than for White individuals. Of particular importance is the substantially larger part of Black single parent poverty attributable to cumulative disadvantages: 91% compared to 63% for the entire sample of single parents. While this is a very important result, it goes beyond the purpose of this paper to explore the mechanisms behind these differences.

In Appendix I, we test for selective attrition in our main decomposition sample. Of the 9,461 parents identified at the time their child's birth, 6,612 are observed at time t-10 (10 years before childbirth), and 5,478 at time t+10. The likelihood of being part of the sample in t-10 is higher for individuals with higher poverty rates, while the likelihood decreases with poverty in t+10. Attrition is much smaller between t-5 and t+5. When replicating our core results in an event window from t-5 to t+5, however, our results are not meaningfully different.

Discussion & Conclusion

Single parenthood has long been identified as key source of poverty and inequality in the U.S. (Kearney 2023; McLanahan 2004). But why are single parents much more likely to be poor relative to partnered parents? Prior studies, generally focusing on post-parenthood poverty outcomes, have addressed the relative roles of single parents' reduced earnings capabilities and the U.S.'s comparatively weak tax and transfer systems. Both perspectives are clearly important, yet they lack attention to what we argue is the largest source of single-parent poverty:

pre-parenthood disadvantages, stemming from childhood circumstances, that generate large selection into single parenthood.

Conceptually, we advance the study of cumulative disadvantage (CD) to understand whether single parenthood can be understood as one mechanism in the transmission of childhood disadvantages to adult disadvantage. Adopting a measure of CD that identifies childhood poverty status based on family resources, as well as county poverty status while young, we find consistent evidence that childhood disadvantages (1) are strongly associated with the likelihood of becoming a single parent and (2) generate persistent, and sometimes widening, gaps in economic resources throughout an adult's life-course. Childhood and county poverty have additive effects on the likelihood of adult poverty.

Empirically, we introduce a decomposition framework that allows researchers to integrate CD directly into single-parent poverty rates and the single-parent poverty penalty (relative to partnered parents). Following the logic of event-study analyses, we dissect post-parenthood poverty rates among single parents into income losses upon becoming a parent, the role of taxes and transfers in reducing poverty, and pre-treatment disadvantages. The first two of these three perspectives are acknowledged regularly in studies of single-parent poverty, partially due to the availability of labor market indicators and income transfer information in oft-used cross-sectional datasets (i.e. the Current Population Survey). The third perspective – pre-treatment CD – is less-frequently acknowledged in debates regarding single-parent poverty and, to our knowledge, has not been incorporated into an accounting framework that can distinguish its relevant weight in explaining single-parent poverty to that of the other two perspectives.

Substantively, we find that pre-treatment disadvantages explain the majority of the single-parent poverty rate and penalty. For example, of the 27-percentage point difference in the post-parenthood poverty rate for single parents versus partnered parents, 17 percentage points (or 63 percent) is attributable to pre-treatment disadvantages. In contrast, the larger

earnings losses for single parents after childbirth explains 12 percentage points (or 44 percent) of the overall disadvantage. Childhood poverty alone explains one-third of the pre-childhood disadvantage that accounts for single parents' poverty, indicating the importance of early life circumstance in creating disadvantage among single parents.

Post-childhood income disparities and taxes/transfers are clearly important, and our findings do not undermine the labor market challenges that single parents face, or the strong connection between non-employment and poverty (Baker 2015; Brady, Baker, and Finnigan 2024). Moreover, our findings do not undermine the importance of the welfare state for increasing the economic well-being of single parents. Our results do emphasize, though, that the study of group differences in adult poverty rates must move beyond an observation of contemporaneous poverty 'risk factors,' or individual-level characteristics that are solely observed post-parenthood, and instead incorporate disparities in early life circumstances. This point speaks to DiPrete and Eirich's (2006:280) concern that "if group differences grow because of a small initial mean difference between groups that is widened through a group-neutral path-dependent CA process, an analyst who fails to look for this CA process may incorrectly conclude that group membership has a persisting effect on outcomes and that group membership is somehow magnifying group-level differences. This incorrect specification could then lead to the search for a continuing group-level mechanism that in fact does not exist." In the context of single parents' economic resources, ignoring initial differences in family and county poverty has arguably led some researchers to an errant search for a group-level mechanism (i.e. post-parenthood employment rates) to explain the single-parent poverty penalty. Instead, in evaluating single-parent poverty through the lens of CD, this study recognizes that single-parent poverty penalty is the continuation of long-running disadvantages that pre-date parenthood.

Our study has several limitations. First, we do not differentiate between married and cohabitating couples. Although these family structures are similar (Kennedy and Fitch 2012), especially with regard to conditions that might influence the results in this paper, such as the

potential number of earners, cohabitation is much less stable in the US than in other countries and is more common among low-income families (Cooper and Pugh 2020; Kearney 2023). Second, we exclude parents who double-up or live with extended families. Although this is not common among the U.S. population (Bernardi and Mortelmans 2018:41), these single parents have additional resources compared to those who live by themselves, their exclusion is important to consider. Similarly, our results cannot be generalized to other high-income countries because they are specific for the U.S. case, a larger country, more racially heterogenous, with higher poverty and inequality, and a smaller welfare state compared to other high-income countries (Sawhill 2022). Next, data does not allow for the identification of complex living arrangements, such as shared or joint custody. Separated couples who co-parent and equally support their children might be different compared to single parents who parent by themselves. Due to small sample sizes, we are also unable to accommodate other sources of heterogeneity among single parents, all with important implications for poverty, adoption, same-sex parenthood, and disability. However, our results can then be interpreted as conservative estimations of poverty and the contribution of pre-parenthood disadvantages to the creation of single parent poverty.

Despite these limitations, this paper advances the literature's understanding of single-parent poverty and, more generally, the use of CD and life-course data in the study of group differences in economic well-being.

References

Aerts, Elise, Ive Marx, and Zachary Parolin. 2022. “Income Support Policies for Single Parents in Europe and the United States: What Works Best?” *The ANNALS of the American Academy of Political and Social Science* 702(1):55–76. doi: 10.1177/00027162221120448.

Baker, Regina S. 2015. “The Changing Association Among Marriage, Work, and Child Poverty in the United States, 1974–2010.” *Journal of Marriage and Family* 77(5):1166–78. doi: 10.1111/jomf.12216.

Baker, Regina S. 2022. “The Historical Racial Regime and Racial Inequality in Poverty in the American South.” *American Journal of Sociology* 127(6):1721–81. doi: 10.1086/719653.

Baker, Regina S., David Brady, Zachary Parolin, and Deadric T. Williams. 2022. “The Enduring Significance of Ethno-Racial Inequalities in Poverty in the U.S., 1993–2017.” *Population Research and Policy Review* 41(3):1049–83. doi: 10.1007/s11113-021-09679-y.

Bernardi, Laura, and Dimitri Mortelmans, eds. 2018. *Lone Parenthood in the Life Course*. Vol. 8. Cham: Springer International Publishing.

Blau, Peter M., and Otis Dudley Duncan. 1967. *The American Occupational Structure*. New York, Wiley.

Brady, David, Regina S. Baker, and Ryan Finnigan. 2024. “The Role Of Single Motherhood In America’s High Child Poverty.” *Demography*.

Brady, David, and Rebekah Burroway. 2012. “Targeting, Universalism, and Single-Mother Poverty: A Multilevel Analysis Across 18 Affluent Democracies.” *Demography* 49:719–46.

Brady, David, Ryan M. Finnigan, and Sabine Hübgen. 2017. “Rethinking the Risks of Poverty: A Framework for Analyzing Prevalences and Penalties.” *American Journal of Sociology* 123(3):740–86.

Brady, David, Ryan Finnigan, and Sabine Hübgen. 2021. “The Relationship between Single Motherhood, Employment, and Poverty: Reply to Moullin and Harkness.” *American Journal of Sociology* 127(2):637–51. doi: 10.1086/717863.

Brooks-Gunn, Jeanne, Greg J. Duncan, Pamela Kato Klebanov, and Naomi Sealand. 1993. “Do Neighborhoods Influence Child and Adolescent Development?” *American Journal of Sociology* 99(2):353–95. doi: 10.1086/230268.

Brown, Susan L. 2006. “Family Structure Transitions and Adolescent Well-Being.” *Demography* 43(3):447–61. doi: 10.1353/dem.2006.0021.

Burciu, Roxana-Diana, and Zachary Parolin. 2024. “Diverging Paths: Heterogeneities in Single Parenthood and Consequences for Child Poverty.” *Socius: Sociological Research for a Dynamic World* 10:23780231241299013. doi: 10.1177/23780231241299013.

Casper, Lynne M., Sara S. McLanahan, and Irwin Garfinkel. 1994. “The Gender-Poverty Gap: What We Can Learn from Other Countries.” *American Sociological Review* 59(4):594–605. doi: 10.2307/2095933.

Cha, Hyungmin, and Abigail Weitzman. 2023. “What Explains Socioeconomic Disparities in Early Pregnancy Rates?” *Social Forces* 101(4):1803–33. doi: 10.1093/sf/soac102.

Chetty, Raj, and Nathaniel Hendren. 2018. “The Impacts of Neighborhoods on Intergenerational Mobility I: Childhood Exposure Effects*.” *The Quarterly Journal of Economics* 133(3):1107–62. doi: 10.1093/qje/qjy007.

Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. 2016. “The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment.” *American Economic Review* 106(4):855–902. doi: 10.1257/aer.20150572.

Cooper, Marianne, and Allison J. Pugh. 2020. “Families Across the Income Spectrum: A Decade in Review.” *Journal of Marriage and Family* 82(1):272–99. doi: 10.1111/jomf.12623.

Cross, Christina J. 2020. “Racial/Ethnic Differences in the Association Between Family Structure and Children’s Education.” *Journal of Marriage and Family* 82(2):691–712. doi: 10.1111/jomf.12625.

Dannefer, D. 2003. “Cumulative Advantage/Disadvantage and the Life Course: Cross-Fertilizing Age and Social Science Theory.” *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 58(6):S327–37. doi: 10.1093/geronb/58.6.S327.

DiPrete, Thomas A., and Gregory M. Eirich. 2006. “Cumulative Advantage as a Mechanism for Inequality: A Review of Theoretical and Empirical Developments.” *Annual Review of Sociology* 32(1):271–97. doi: 10.1146/annurev.soc.32.061604.123127.

Dupre, Matthew E. 2007. “Educational Differences in Age-Related Patterns of Disease: Reconsidering the Cumulative Disadvantage and Age-As-Leveler Hypotheses.” *Journal of Health and Social Behavior* 48(1):1–15. doi: 10.1177/002214650704800101.

Edin, Kathryn, and Maria Kefalas. 2011. *Promises I Can Keep: Why Poor Women Put Motherhood before Marriage, With a New Preface*.

Edin, Kathryn, and Rebecca Joyce Kissane. 2010. “Poverty and the American Family: A Decade in Review.” *Journal of Marriage and Family* 72(3):460–79. doi: 10.1111/j.1741-3737.2010.00713.x.

Edin, Kathryn, and Laura Lein. 1997. *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work*. Russell Sage Foundation.

Engle, Patrice L., and Maureen M. Black. 2008. “The Effect of Poverty on Child Development and Educational Outcomes.” *Annals of the New York Academy of Sciences* 1136(1):243–56. doi: 10.1196/annals.1425.023.

Ferraro, Kenneth F., and Jessica A. Kelley-Moore. 2012. “Cumulative Disadvantage and Health: Long-Term Consequences of Obesity?”

Ferraro, Kenneth F., and Tetyana Pylypiv Shippee. 2009. “Aging and Cumulative Inequality: How Does Inequality Get Under the Skin?” *The Gerontologist* 49(3):333–43. doi: 10.1093/geront/gnp034.

Fomby, Paula, and Andrew J. Cherlin. 2007. “Family Instability and Child Well-Being.” *American Sociological Review* 72(2):181–204. doi: 10.1177/000312240707200203.

Fomby, Paula, Hope Harvey, and Kelly Musick. 2023. “Income Sources Across Childhood in Families With Nonresident Fathers.” *Demography* 60(1):41–72. doi: 10.1215/00703370-10424403.

Geroninus, Arljne P., and S. Korenman. 1992. “The Socioeconomic Consequences of Teen Childbearing Reconsidered.” *The Quarterly Journal of Economics* 1187–1214. doi: https://doi.org/10.2307/2118385.

Gornick, Janet C., Laurie C. Maldonado, and Amanda Sheely. 2022. “Single-Parent Families and Public Policy in High-Income Countries: Introduction to the Volume.” *The ANNALS of the American Academy of Political and Social Science* 702(1):8–18. doi: 10.1177/00027162221133250.

Guzzo, Karen Benjamin, and Sarah R. Hayford. 2020. “Pathways to Parenthood in Social and Family Contexts: Decade in Review, 2020.” *Journal of Marriage and Family* 82(1):117–44. doi: 10.1111/jomf.12618.

Harcourt, Kate Taylor, and Francesca Adler-Baeder. 2015. “Family Mapping: A Cumulative Measure of Family Structure and Instability.” *Journal of Divorce & Remarriage* 56(3):199–219. doi: 10.1080/10502556.2015.1012697.

Harkness, Susan. 2022. “The Accumulation of Economic Disadvantage: The Influence of Childbirth and Divorce on the Income and Poverty Risk of Single Mothers.” *Demography* 59(4):1377–1402. doi: 10.1215/00703370-10065784.

Härkönen, Juho, Fabrizio Bernardi, and Diederik Boertien. 2017. “Family Dynamics and Child Outcomes: An Overview of Research and Open Questions.” *European Journal of Population* 33(2):163–84. doi: 10.1007/s10680-017-9424-6.

Hoffman, Saul D., E. Michael Foster, and Frank F. Furstenberg. 1993. “Re-Evaluating the Costs of Teenage Childbearing.” *Demography* 30(1):1–13. doi: 10.1037/e387092004-001.

Hubgen, S. 2020. “Understanding Lone Mothers’ High Poverty in Germany: Disentangling Composition Effects and Effects of Lone Motherhood.” *ADVANCES IN LIFE COURSE RESEARCH* 44. doi: 10.1016/j.alcr.2020.100327.

Kearney, Melissa Schettini. 2023. *The Two-Parent Privilege: How Americans Stopped Getting Married and Started Falling Behind*. Swift Press.

Kennedy, S., and C. Fitch. 2012. “Measuring Cohabitation and Family Structure in the United States: Assessing the Impact of New Data From the Current Population Survey.” *Demography* 49(4):1479–98. doi: 10.1007/s13524-012-0126-8.

Lang, Kevin, and Jay L. Zagorsky. 2001. “Does Growing up with a Parent Absent Really Hurt?” *The Journal of Human Resources* 36(2):253–73. doi: 10.2307/3069659.

Layte, Richard, and Christopher T. Whelan. 2002. “Cumulative Disadvantage Or Individualisation? A Comparative Analysis Of Poverty Risk And Incidence.” *European Societies* 4(2):209–33. doi: 10.1080/14616690220142790.

Maldonado, Laurie C., and Rense Nieuwenhuis. 2015. “Family Policies and Single Parent Poverty in 18 OECD Countries, 1978–2008.” *Community, Work & Family* 18(4):395–415. doi: 10.1080/13668803.2015.1080661.

McLanahan, Sara. 2004. “Diverging Destinies: How Children Are Faring under the Second Demographic Transition.” *Demography* 41(4):607–27. doi: 10.1353/dem.2004.0033.

McLanahan, Sara. 2009. “Fragile Families and the Reproduction of Poverty.” *The ANNALS of the American Academy of Political and Social Science* 621(1):111–31. doi: 10.1177/0002716208324862.

McLanahan, Sara, and Christine Percheski. 2008. “Family Structure and the Reproduction of Inequalities.” *Annual Review of Sociology* 34(1):257–76. doi: 10.1146/annurev.soc.34.040507.134549.

McLanahan, Sara, and Gary D. Sandefur. 1994. *Growing Up with a Single Parent: What Hurts, What Helps*. Harvard University Press.

Merton, Robert K. 1968. “The Matthew Effect in Science” *Science* 159(3810):55–63.

Moullin, Sophie, and Susan Harkness. 2021. “The Single Motherhood Penalty as a Gender Penalty: Comment on Brady, Finnigan, and Hübgen.” *American Journal of Sociology* 127(2):621–36. doi: 10.1086/717886.

Musick, Kelly, and Robert D. Mare. 2004. “Family Structure, Intergenerational Mobility, and the Reproduction of Poverty: Evidence for Increasing Polarization?” *Demography* 41(4):629–48. doi: 10.1353/dem.2004.0034.

Nieuwenhuis, Rense. 2022. “Single Parents Competing in a Dual-Earner Society: Social Policy to Level the Playing Field.” *The ANNALS of the American Academy of Political and Social Science* 702(1):114–28. doi: 10.1177/00027162221122686.

Nieuwenhuis, Rense, and Laurie Maldonado, eds. 2018. *The Triple Bind of Single-Parent Families: Resources, Employment and Policies to Improve Well-Being*. Policy Press.

O’Rand, Angela M. 1996. “The Precious and the Precocious: Understanding Cumulative Disadvantage and Cumulative Advantage Over the Life Course.” *The Gerontologist* 36(2):230–38. doi: 10.1093/geront/36.2.230.

Parolin, Zachary, Jordan Matsudaira, Jane Waldfogel, and Christopher Wimer. 2022. “Exposure to Childhood Poverty and Racial Differences in Economic Opportunity in

Young Adulthood." *Demography* 59(6):2295–2319. doi: 10.1215/00703370-10350740.

Parolin, Zachary, Rafael Pintro-Schmitt, Gøsta Esping-Andersen, and Peter Fallesen. 2024. "Intergenerational Persistence of Poverty in Five High-Income Countries." *Nature Human Behaviour* 1–14. doi: 10.1038/s41562-024-02029-w.

Paugam, Serge. 1996. "Poverty and Social Disqualification: A Comparative Analysis of Cumulative Social Disadvantage in Europe." *Journal of European Social Policy* 6(4):287–303. doi: 10.1177/095892879600600402.

Panel Study of Income Dynamics, restricted use data. Produced and distributed by the Institute for Social Research, University of Michigan, Ann Arbor, MI (2021)

Sawhill, Isabel V. 2022. "Single Parents in High-Income Countries: What the United States Can Learn from Others." *The ANNALS of the American Academy of Political and Social Science* 702(1):226–35. doi: 10.1177/00027162221123446.

Schafer, Markus H., Kenneth F. Ferraro, and Sarah A. Mustillo. 2011. "Children of Misfortune: Early Adversity and Cumulative Inequality in Perceived Life Trajectories." *American Journal of Sociology* 116(4):1053–91. doi: 10.1086/655760.

Sharkey, Patrick, and Felix Elwert. 2011. "The Legacy of Disadvantage: Multigenerational Neighborhood Effects on Cognitive Ability." *American Journal of Sociology* 116(6):1934–81. doi: 10.1086/660009.

Sharkey, Patrick, and Jacob W. Faber. 2014. "Where, When, Why, and For Whom Do Residential Contexts Matter? Moving Away from the Dichotomous Understanding of Neighborhood Effects." *Annual Review of Sociology* 40(1):559–79. doi: 10.1146/annurev-soc-071913-043350.

Smeeding, Timothy M. 2016. "Poverty Measurement." Pp. 21–46 in *The Oxford Handbook of the Social Science of Poverty*. Oxford University Press.

Vandecasteele, Leen. 2011. "Life Course Risks or Cumulative Disadvantage? The Structuring Effect of Social Stratification Determinants and Life Course Events on Poverty Transitions in Europe." *European Sociological Review* 27(2):246–63. doi: 10.1093/esr/jcq005.

Wu, Lawrence L. 1996. "Effects of Family Instability, Income, and Income Instability on the Risk of a Premarital Birth." *American Sociological Review* 61(3):386. doi: 10.2307/2096355.

Zagel, Hannah. 2014. "Are All Single Mothers the Same? Evidence from British and West German Women's Employment Trajectories." *European Sociological Review* 30(1):49–63. doi: 10.1093/esr/jct021.

Zagel, Hannah. 2023. *Single Parenthood in the Life Course: Family Dynamics and Inequality in the Welfare State*. Wiesbaden: Springer Fachmedien Wiesbaden.

FIGURE AND TABLES

Figure 1: Conceptual perspectives on single parenthood and poverty

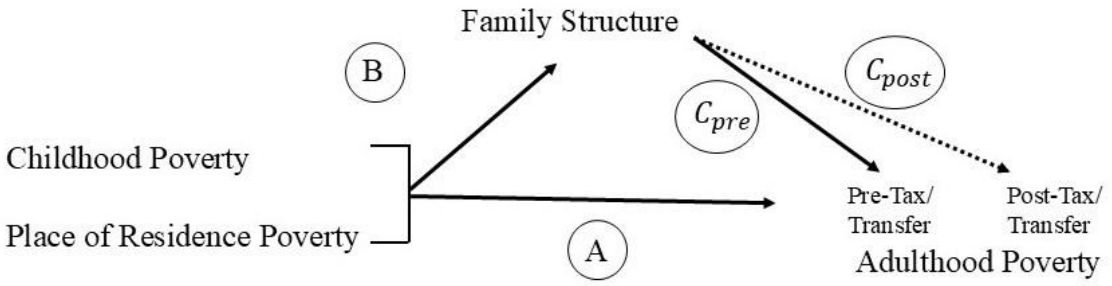


Figure 2: Stylized example of decomposition of single-parent poverty rate and single-parent poverty penalty

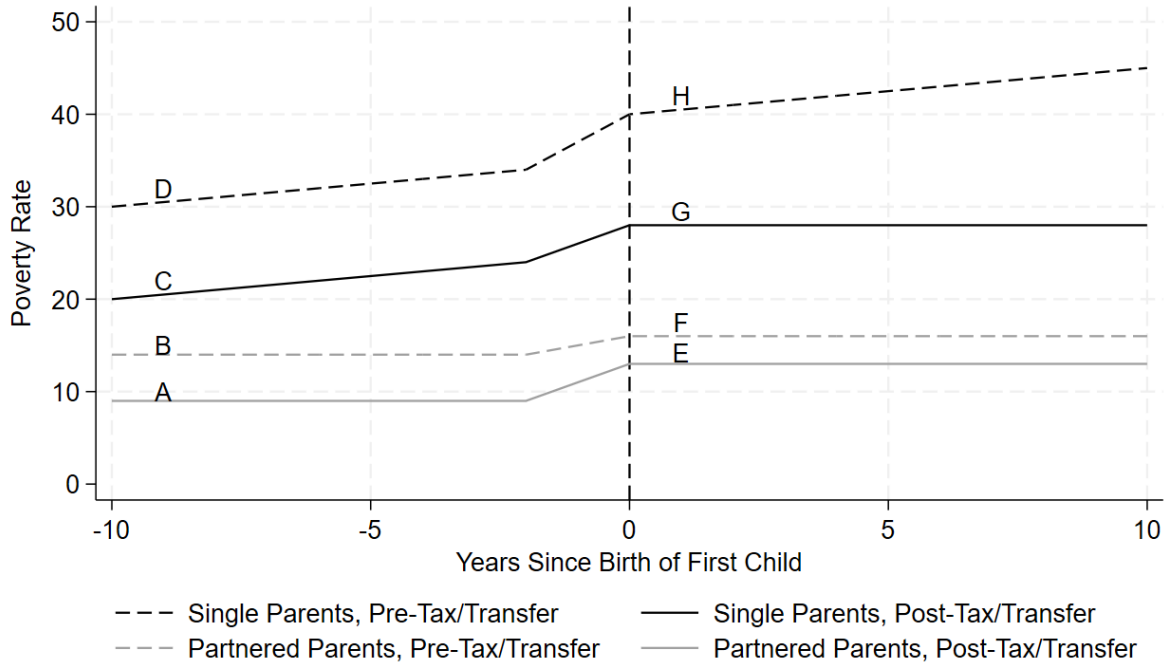


Table 1: Descriptive data on poverty and single parenthood by childhood circumstances

	Share of Childhood in Poverty (Ages 0-17)	Poverty in Adulthood (Ages 25-45)	% Single Parents (All, Ages 25-45)	% Single Parents (Women Only, Ages 25-45)
Low Childhood Poverty	0.00	0.08	0.08	0.14
Medium Childhood Poverty	0.15	0.13	0.12	0.20
High Childhood Poverty	0.66	0.28	0.22	0.38
Low County Poverty	0.12	0.11	0.10	0.18
Medium County Poverty	0.15	0.14	0.12	0.21
High County Poverty	0.27	0.18	0.14	0.26

Notes: Authors' own calculations based on PSID data. County poverty refers to mean county poverty rate during childhood.

Table 2. Associations between childhood poverty, county poverty, and adult poverty

	A) Poverty (Ages 25-45)	B) Poverty (Ages 25-45)	C) Poverty (Ages 25-45)	D) Poverty (Ages 25-45)
Child Poverty	0.419***		0.409***	0.490***
	(0.008)		(0.014)	(0.014)
County Poverty		0.388***	0.071***	0.051
		(0.015)	(0.015)	(0.026)
Child Pov*Age				-0.009***
				(.001)
County Pov*Age				0.003
				(.003)
	A) Income to Poverty Line (Ages 25-45)	B) Income to Poverty Line (Ages 25-45)	C) Income to Poverty Line (Ages 25-45)	D) Income to Poverty Line (Ages 25-45)
Child Poverty	-2.06***		-1.83***	-1.69***
	(0.24)		(0.027)	(0.043)
County Poverty		-2.88***	-1.46***	-1.65***
		(0.078)	(0.080)	(0.118)
Child Pov*Age				-0.017***
				(.005)
County Pov*Age				0.002
				(.015)
No. of Obs.	59,745	59,745	59,745	59,745

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Controls include age, gender, and total number of years observed in sample during adulthood. The age variable is centered at age 25 and the interaction term is linear. Sample includes adults between ages 25 to 45 who meet the sample criteria specified in the Methods section. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Associations between childhood poverty, county poverty, and single parenthood

	A) Single Parenthood	B) Single Parenthood	C) Single Parenthood
Child Poverty	0.223***		0.230***
	(0.007)		(0.007)
County Poverty		0.133***	-0.046***
		(0.012)	(0.013)
No. of Obs.	59,873	59,873	59,873

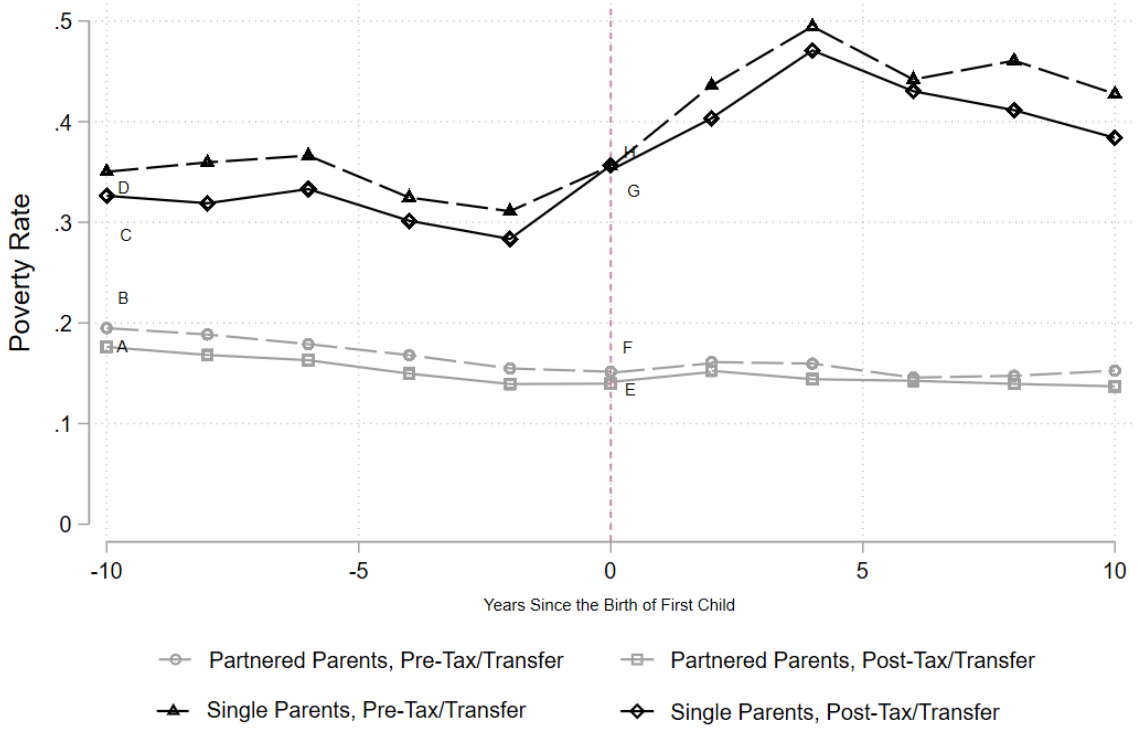
Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls include year fixed effects, age dummies, gender, and number of adulthood years observed in the PSID sample.

Table 4. Associations between single parenthood and adult poverty

	A) Poverty (Ages 25-45)	B) Poverty (Ages 25-45)	C) Income to Poverty Line (Ages 25-45)	D) Income to Poverty Line (Ages 25-45)
Ever a Single Parent	0.237***	0.328***	-1.143***	-1.065***
	(0.007)	(0.014)	(0.022)	(0.036)
Ever a Single Parent * Age		-0.105***		-0.009*
		(0.001)		(0.004)
No. of Obs.	59,745	59,745	59,702	59,702

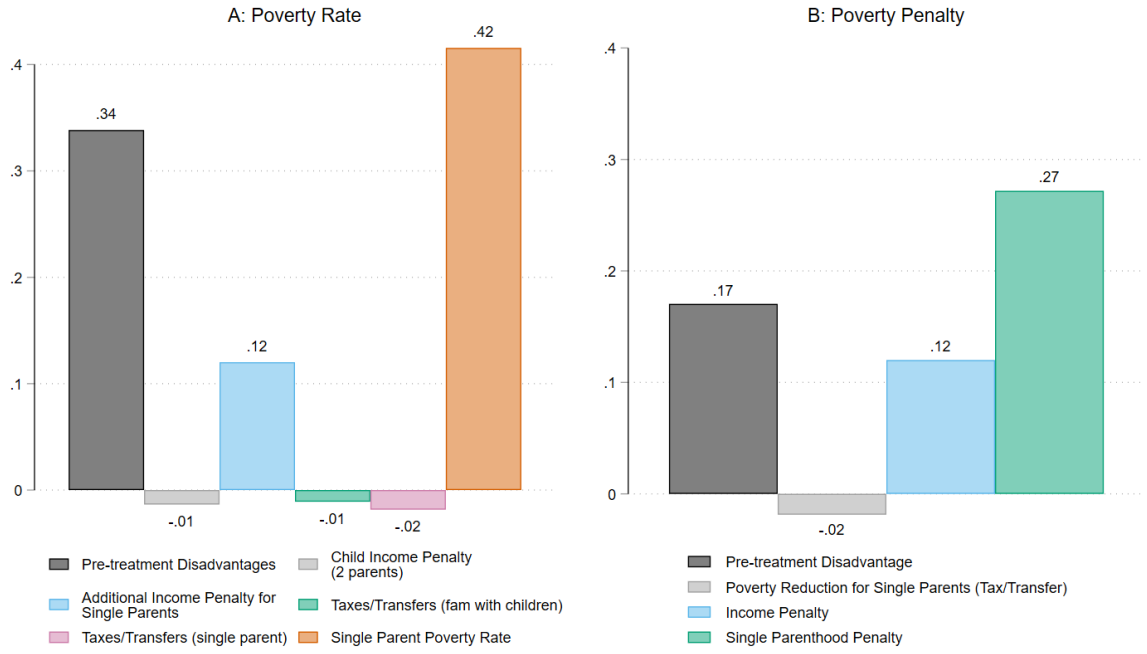
Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Controls include year fixed effects, age dummies, gender, and number of adulthood years observed in the PSID sample. The continuous age variable is centered at age 25. Sample includes adults between ages 25 to 45 who meet the sample criteria specified in the Methods section. *** p<0.01, ** p<0.05, * p<0.1.

Figure 3. Poverty rates among single parents and partnered parents from 10 years prior to the birth of their first child to 10 years after the birth of their first child



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection after the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure 4. Decomposition of single-parent poverty rate and poverty penalty



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection after the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the percentage of individuals who are in poverty based on this definition. The decomposition in Panel A follows Equation 4. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered-parents. The decomposition in Panel B follows Equation 5.

APPENDICES

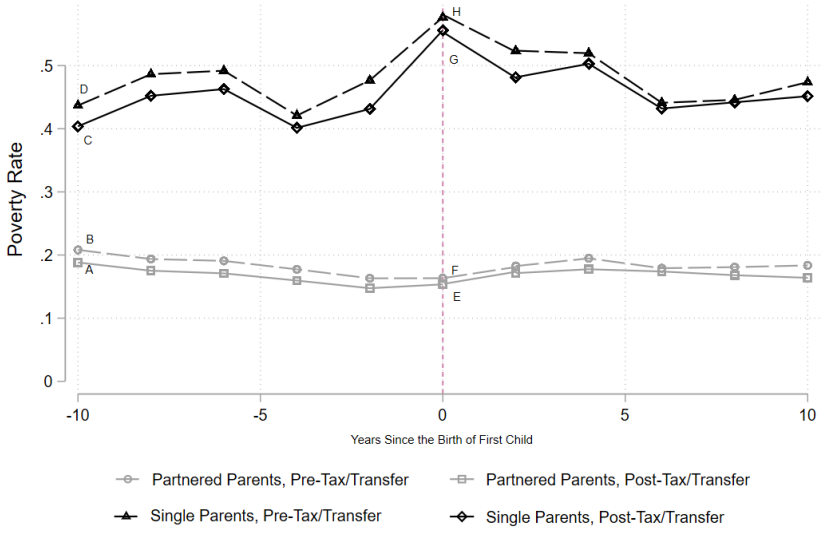
Appendix A: Descriptive Statistics

Variable	Mean	Standard Deviation	Min	Max
Child Poverty	0.28	0.34	0	1
County Poverty	0.18	0.12	0.03	0.61
Age	26.6	6.2	18	45

Notes: The sample includes all individuals who are observed at least twice in the 10 years period before and after the birth of their oldest child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. County poverty refers to mean county poverty rate during childhood.

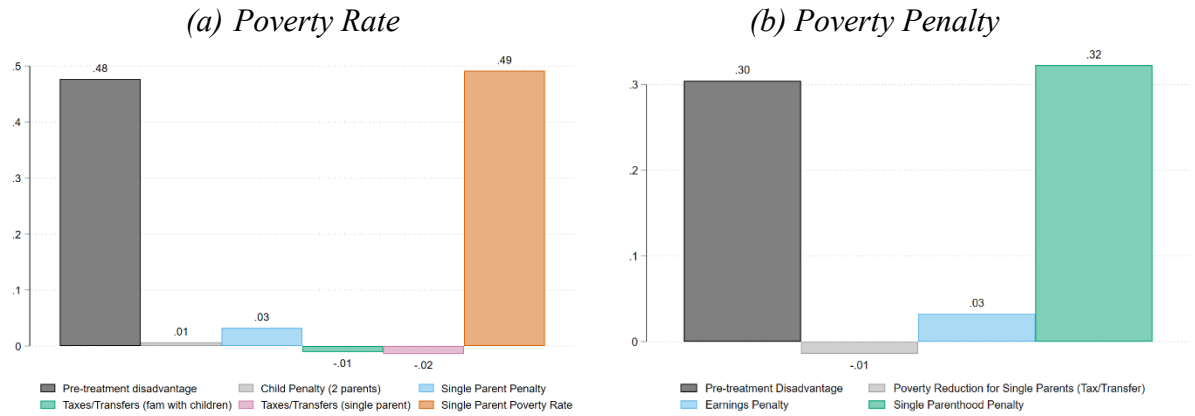
Appendix B: Alternative definitions of treatment groups

Figure B1. Long-term trends in poverty among parents, single at birth



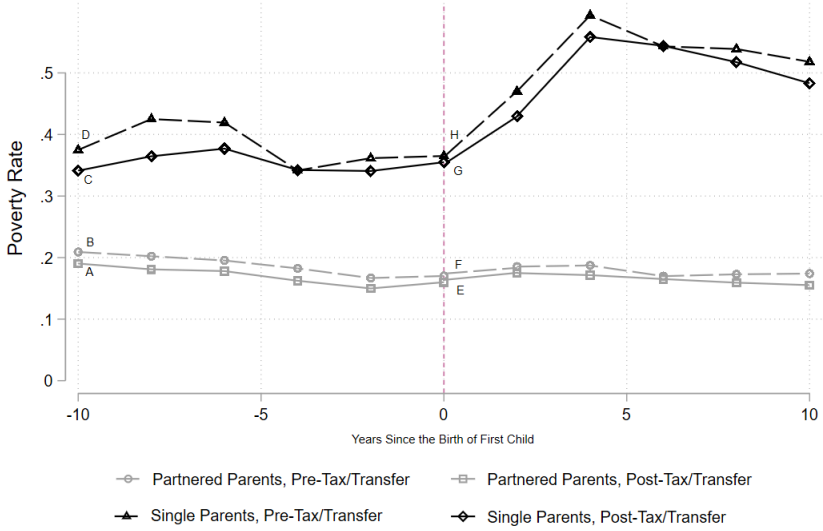
Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition in the year of the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure B2. Decomposition of single-parent poverty, single at birth



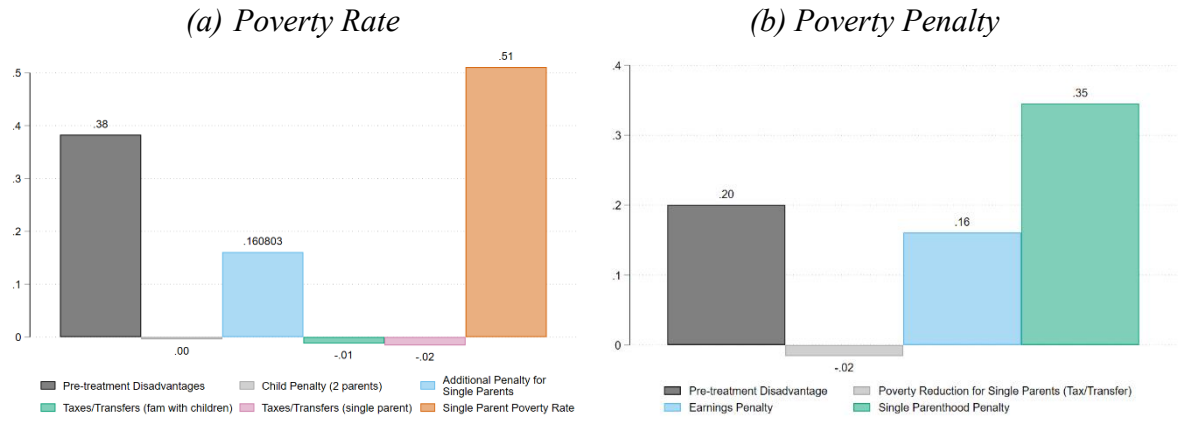
Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition the year of the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

Figure B3. Long-term trends in poverty among parents, single for at least 5 years



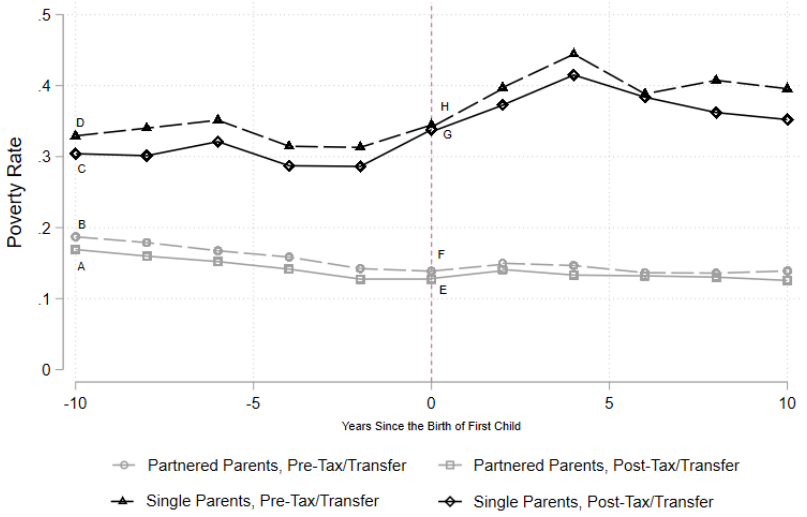
Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 5 years before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure B4. Decomposition of single-parent poverty, single for at least 5 years



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 5 years before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

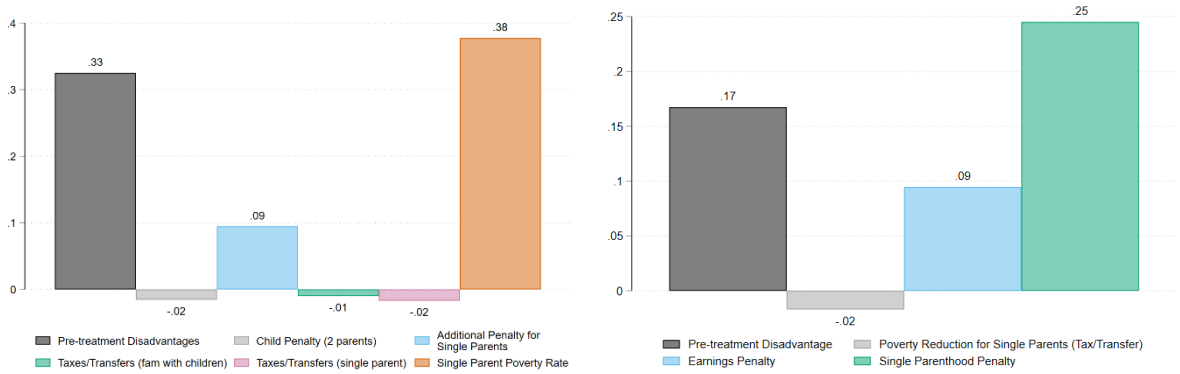
Figure B5. Long-term trends in poverty among parents, single for at least one year



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least one year before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure B6. Decomposition of single-parent poverty, single for at least one year

(a) Poverty Rate *(b) Poverty Penalty*

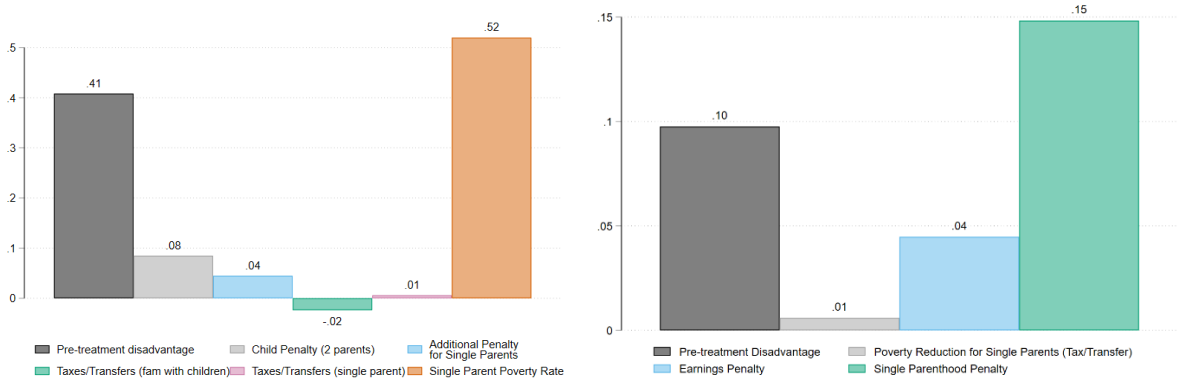


Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least one year before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

For the sample selection criteria that requires single parents to be single for the entire observed period after the birth of their child (until the child turns 11 years old), the sample sizes are too small to allow for the investigation of long-time trends in single parenthood. For this reason, we only present the results of the decomposition, where single parents are pooled across years (N = 346).

Figure B7. Decomposition of single-parent poverty, single for the entire period after childbirth

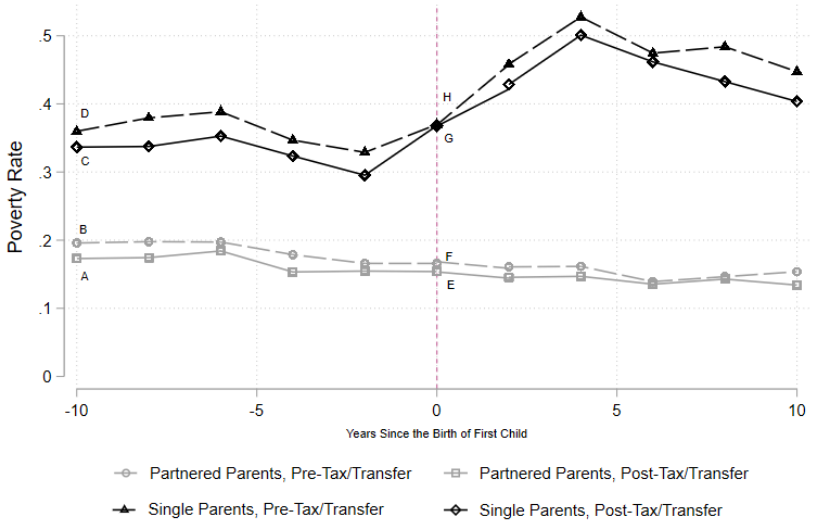
(a) Poverty Rate *(b) Poverty Penalty*



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for the entire period between childbirth and when their child turns 11 years old (or the entire period they are observed between 0 and 10 years old if they are not observed consistently in each year). Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

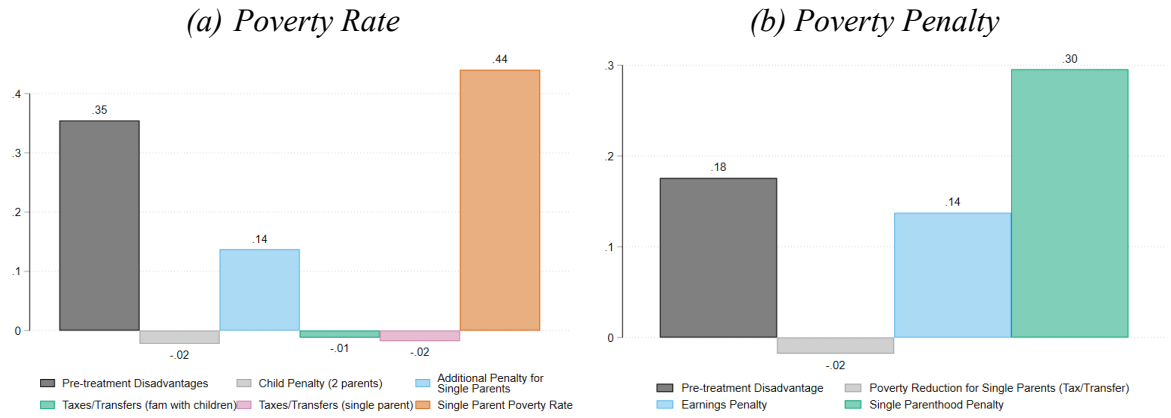
Appendix C. Main decomposition with a sample of women only

Figure C1. Long-term trends in poverty among mothers



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of women who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure C2. Decomposition of single-mother poverty

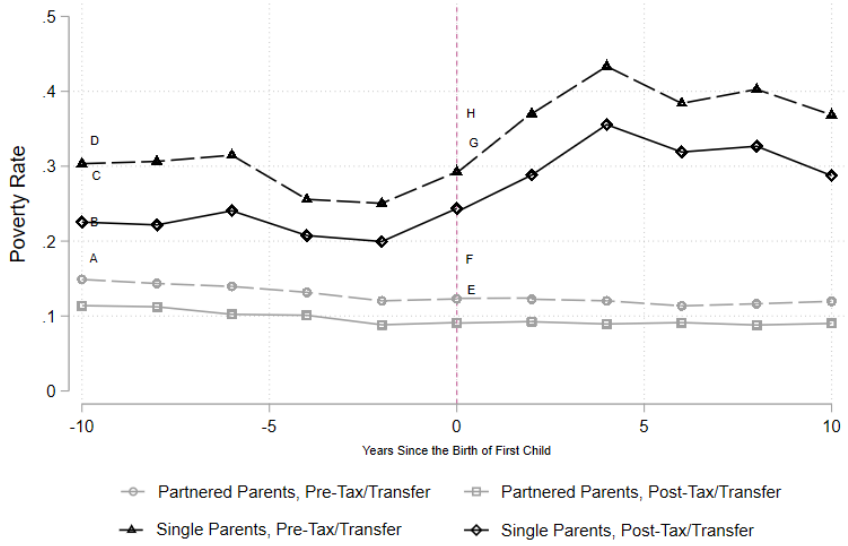


Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of mothers who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

Appendix D. Alternative Poverty Measures

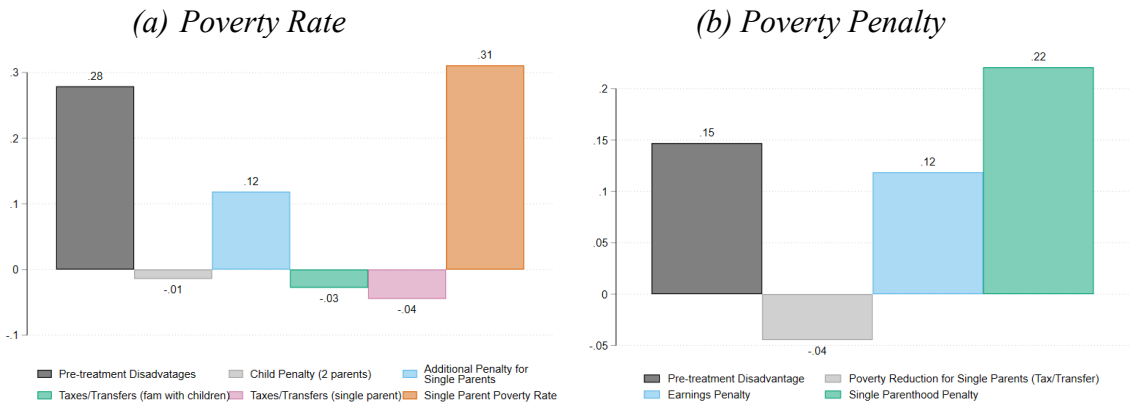
1. Poverty below 40% of the annual median income

Figure D1. Long-term trends in poverty among parents



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 40% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

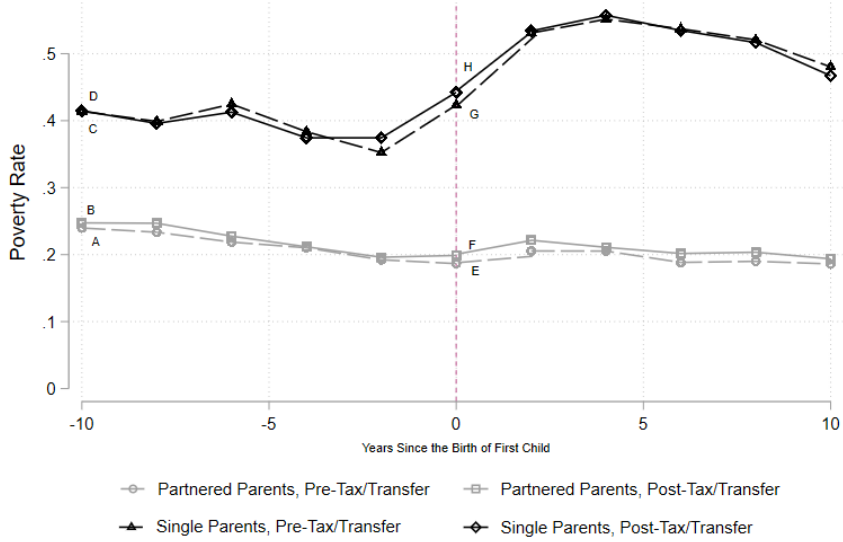
Figure D2. Decomposition of single-parent poverty



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 40% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

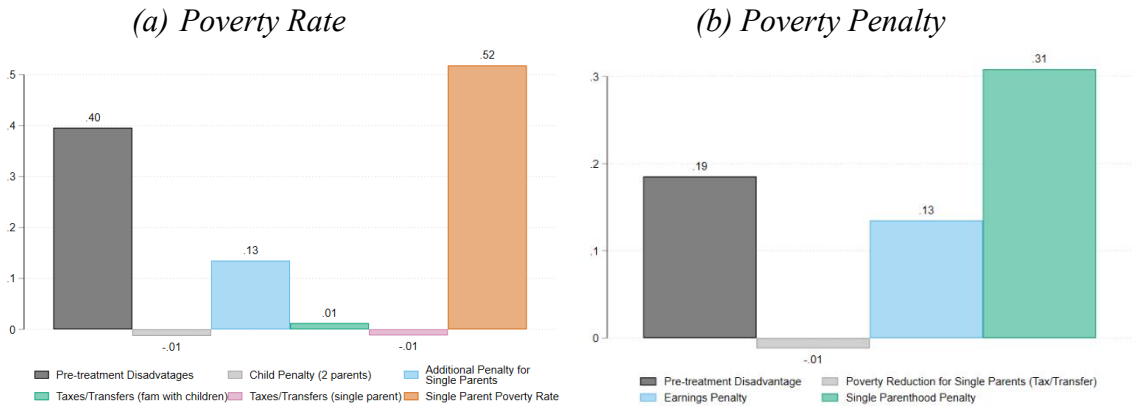
2. Poverty below 60% of the annual median income

Figure D3. Long-term trends in poverty among parents



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 60% of the median income in that year. We present results for every second year because the PSID started collecting data only every second year since 1997.

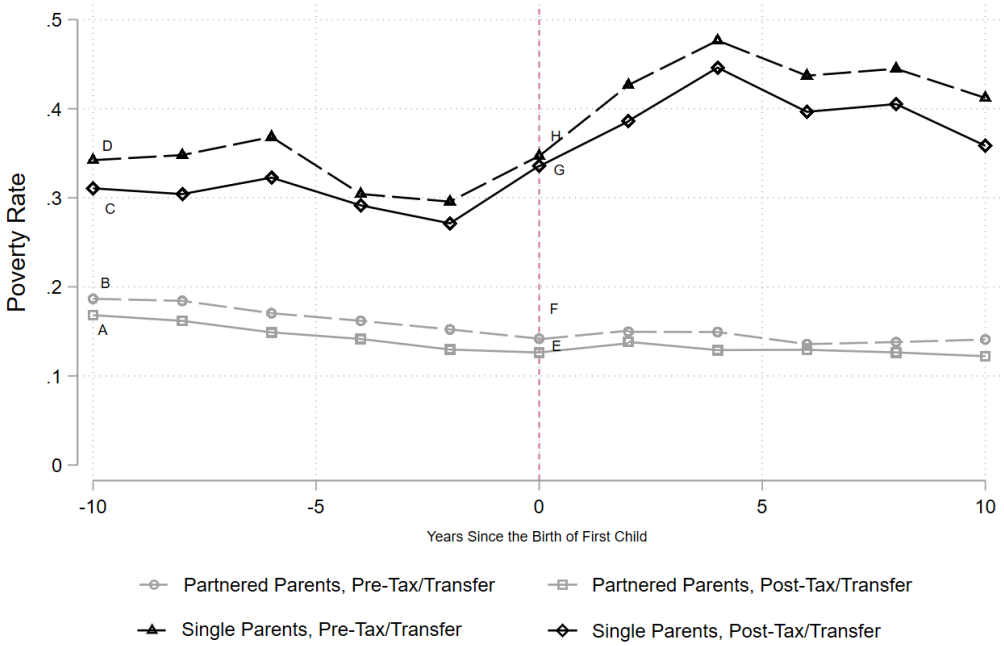
Figure D4. Decomposition of single-parent poverty



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 60% of the median income in that year. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

3. Poverty at 50% below the 2019 median income, adjusted for inflation

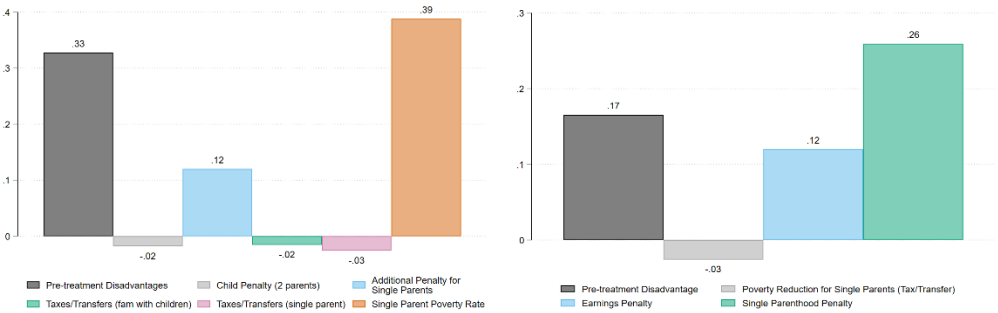
Figure D5. Long-term trends in poverty among parents



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in 2019 adjusted for inflation using the CPS inflation adaptation variable cpi99 (https://cps.ipums.org/cps/cpi99.shtml). We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure D6. Decomposition of single-parent poverty

(a) Poverty Rate *(b) Poverty Penalty*



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in 2019 adjusted for inflation using the CPS inflation adaptation variable cpi99 (https://cps.ipums.org/cps/cpi99.shtml). The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.

Appendix E: Alternative results when varying sample criteria related to number of years observed in childhood and adulthood within PSID

Table E1: No restriction on number of years observed during childhood or adulthood to be included in sample: Associations between childhood poverty, place of residence poverty and adult poverty

	A) Poverty (Ages 25-45)	B) Poverty (Ages 25-45)	C) Poverty (Ages 25-45)	E) Poverty (Ages 25-45)
Child Poverty	0.352***		0.336***	0.379***
	(0.006)		(0.006)	(0.011)
County Poverty		0.395***	0.115***	0.118***
		(0.012)	(0.035)	(0.022)
Child Pov*Age				-0.006***
				(.001)
County Pov*Age				0.000
				(.002)
	E) Income to Poverty Line (Ages 25-45)	F) Income to Poverty Line (Ages 25-45)	G) Income to Poverty Line (Ages 25-45)	H) Income to Poverty Line (Ages 25-45)
Child Poverty	-1.76***		-1.54***	-1.49***
	(0.019)		(0.021)	(0.032)
County Poverty		-2.84***	-1.57***	-1.52***
		(0.061)	(0.063)	(0.094)
Child Pov*Age				-0.007
				(.004)
County Pov*Age				-0.005
				(.012)
No. of Obs.	59,745	59,745	59,745	59,745

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Controls include age, gender, and total number of years observed in sample during adulthood. The age variable is centered at age 25 and the interaction term is linear. Sample includes adults between ages 25 to 45 who meet the sample criteria specified in the Methods section. Instead of requiring 5 years of observed childhood and adulthood years in the PSID, this specification imposes no restrictions. *** p<0.01, ** p<0.05, * p<0.1.

Table E2: Restriction of three years observed during childhood or adulthood to be included in sample: Associations between childhood poverty, place of residence poverty and adult poverty

	A) Poverty (Ages 25-45)	B) Poverty (Ages 25-45)	C) Poverty (Ages 25-45)	E) Poverty (Ages 25-45)
Child Poverty	0.389***		0.375***	0.431***
	(0.006)		(0.006)	(0.012)
County Poverty		0.407***	0.105***	0.101***
		(0.0124	(0.013)	(0.023)
Child Pov*Age				-0.007***
				(.001)
County Pov*Age				0.000
				(.002)
	E) Income to Poverty Line (Ages 25-45)	F) Income to Poverty Line (Ages 25-45)	G) Income to Poverty Line (Ages 25-45)	H) Income to Poverty Line (Ages 25-45)
Child Poverty	-1.91***		-1.69***	-1.62***
	(0.022)		(0.024)	(0.032)
County Poverty		-2.92***	-1.55***	-1.58***
		(0.068)	(0.070)	(0.094)
Child Pov*Age				-0.008
				(.004)
County Pov*Age				-0.002
				(.012)
No. of Obs.	59,745	59,745	59,745	59,745

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Controls include age, gender, and total number of years observed in sample during adulthood. The age variable is centered at age 25 and the interaction term is linear. Sample includes adults between ages 25 to 45 who meet the sample criteria specified in the Methods section. Instead of requiring 5 years of observed childhood and adulthood years in the PSID, this specification imposes a 3-year restriction. *** p<0.01, ** p<0.05, * p<0.1.

Appendix F: Alternative results when extending age range of primary sample to 55

Table F1: Adult age range extended from age 45 to 55: Associations between childhood poverty, place of residence poverty and adult poverty

	A) Poverty (Ages 25-55)	B) Poverty (Ages 25-55)	C) Poverty (Ages 25-55)	E) Poverty (Ages 25-55)
Child Poverty	0.405***		0.394***	0.478***
	(0.007)		(0.008)	(0.013)
County Poverty		0.371***	0.069***	0.052*
		(0.014)	(0.014)	(0.023)
Child Pov*Age				-0.0067**
				(.001)
County Pov*Age				0.002
				(.002)
	E) Income to Poverty Line (Ages 25-55)	F) Income to Poverty Line (Ages 25-55)	G) Income to Poverty Line (Ages 25-55)	H) Income to Poverty Line (Ages 25-55)
Child Poverty	-2.09***		-1.85***	-1.72***
	(0.025)		(0.028)	(0.040)
County Poverty		-2.89***	-1.47***	-1.45***
		(0.076)	(0.079)	(0.107)
Child Pov*Age				-0.012**
				(.004)
County Pov*Age				-0.001
				(.001)
No. of Obs.	68,065	68,065	68,065	68,065

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Controls include age, gender, and total number of years observed in sample during adulthood. The age variable is centered at age 25 and the interaction term is linear. Sample includes adults between ages 25 to 55 who meet the sample criteria specified in the Methods section. *** p<0.01, ** p<0.05, * p<0.1.

Appendix G: Fairlie Decomposition

Table G1. Fairlie decomposition of pre-childbirth, pre-tax/transfer poverty rates among individuals who become single parents versus individuals who have their first child in a two-parent household

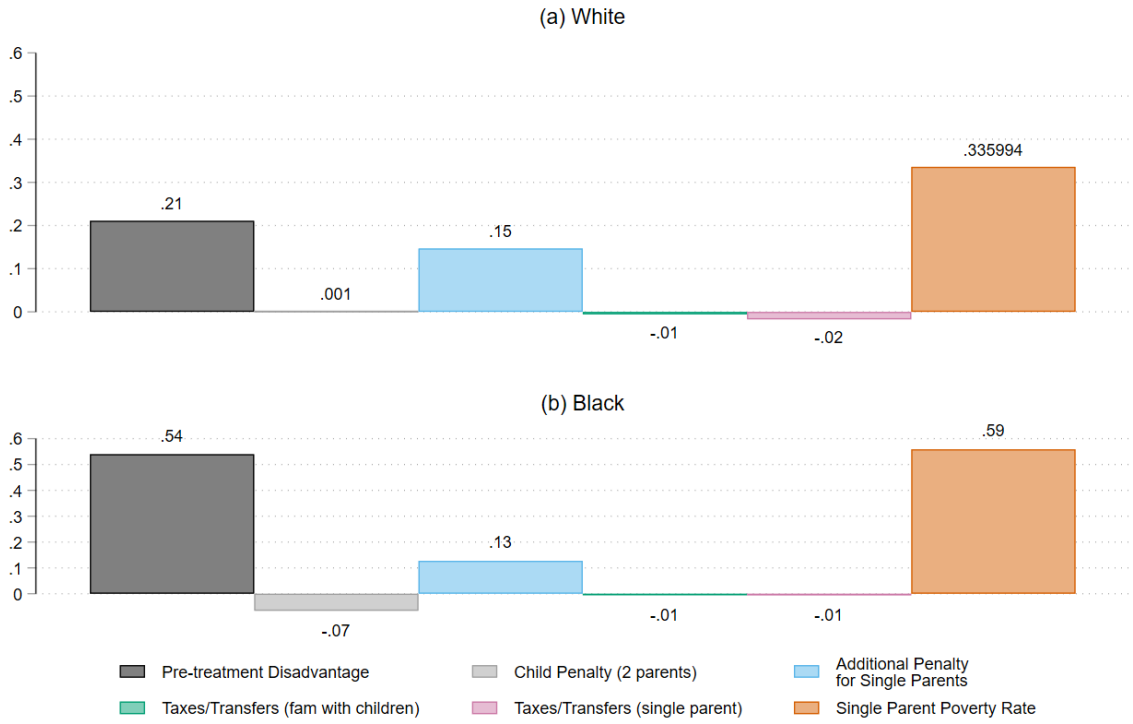
	A) Pre-Tax/Transfer Poverty Rate (10 Years Before Childbirth to Year Before Childbirth)	B) Pre-Tax/Transfer Poverty Rate (10 Years Before Childbirth to Year Before Childbirth)	C) Pre-Tax/Transfer Poverty Rate (10 Years Before Childbirth to Year Before Childbirth)
Poverty Rate for Two-Parent Group	0.179	0.179	0.179
Poverty Rate for Single Parent Group	0.342	0.342	0.342
Difference (percentage point)	-0.163	-0.163	-0.163
Share Explained by Observables	-0.092	-.008	-0.092
Child Poverty	-0.092***		-0.090***
	(0.001)		(0.001)
County Poverty		-0.006***	-0.001***
		(0.000)	(0.000)
No. of Obs.	59,745	59,745	59,702

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. Additional variables include year fixed effects, age dummies, and gender. Any small remaining difference between "Share explained" and the sum of the child poverty and county poverty coefficients is attributable to these additional controls. The sample is limited to our treatment and control groups in the 10 years prior to treatment. *** p<0.01, ** p<0.05, * p<0.1.

Appendix H. Decomposition by Race/Ethnicity

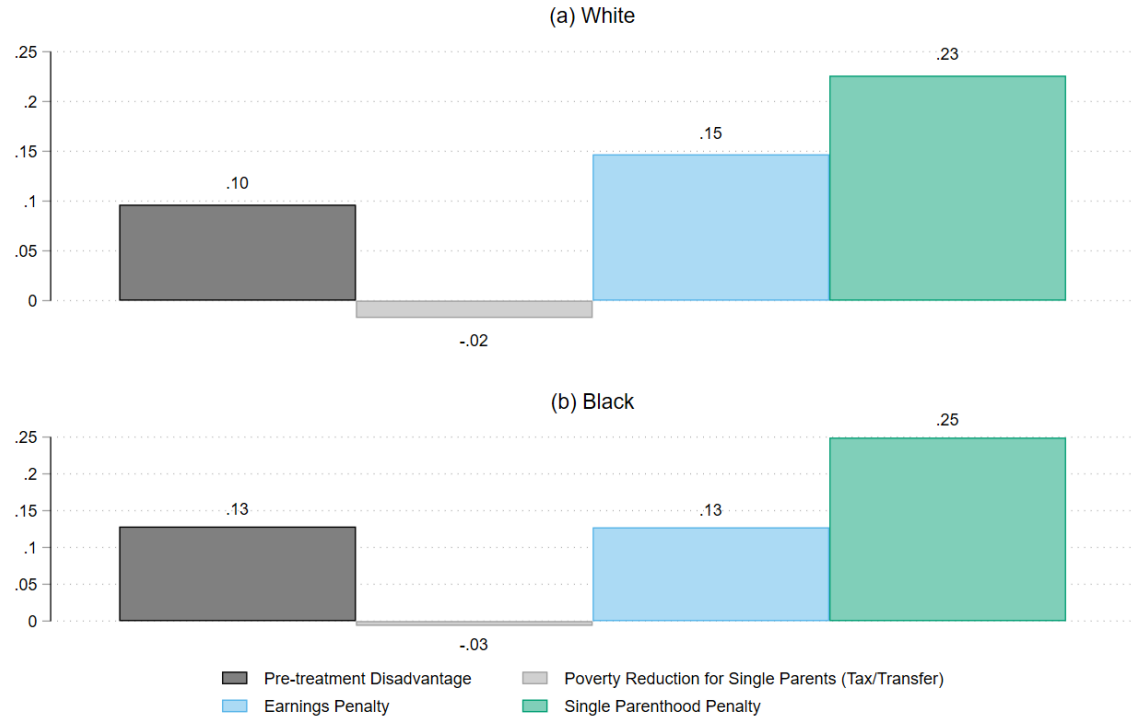
Acknowledging the importance of racial/ethnic belonging in US poverty as well as differences in single parenthood between White and Black families, this appendix replicates the main decomposition analysis by presenting results separated for these two racial groups.

Figure H1. Decomposition of Single Parent Poverty Rate by Race/Ethnicity



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection after the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty rate is the percentage of individuals who are in poverty based on this definition. Racial/ethnic belonging is determined based on PSID labels. This decomposition follows Equation 4.

Figure H2. Decomposition of Single Parent Poverty Penalty by Race/Ethnicity



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection after the birth of their first child. Poverty is measured as a binary outcome indicating if an individual's equivalized income is below 50% of the median income in that year. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered-parents. Racial/ethnic belonging is determined based on PSID labels. This decomposition follows Equation 5.

Appendix I. Attrition of decomposition sample

Table I1. Sample sizes by time

Time Since the Birth of the First Child	Sample Size	Attrition Rate Compared to t (%)
t-10	6612	43.1
t-9	6969	26.3
t-8	7020	25.8
t-7	7467	21.1
t-6	7480	20.9
t-5	8087	14.5
t-4	8331	11.9
t-3	9187	2.9
t-2	9654	0
t-1	9633	0
t (childbirth)	9461	
t+1	9593	0
t+2	9127	3.5
t+3	8834	6.6
t+4	8250	12.8
t+5	7985	15.6
t+6	7370	22.1
t+7	7096	25.0
t+8	6494	31.4
t+9	6261	33.8
t+10	5478	42.1

Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed in the specific wave before and after the birth of their oldest child. Sample sizes are larger in t-2, t-1 and t+1 compared to t because the PSID collects data biannually before 1997: for children born in years when the PSID was not collecting data, observations are only available in the years before and after.

Table I2. Likelihood of being in the sample in t-10 and t+10

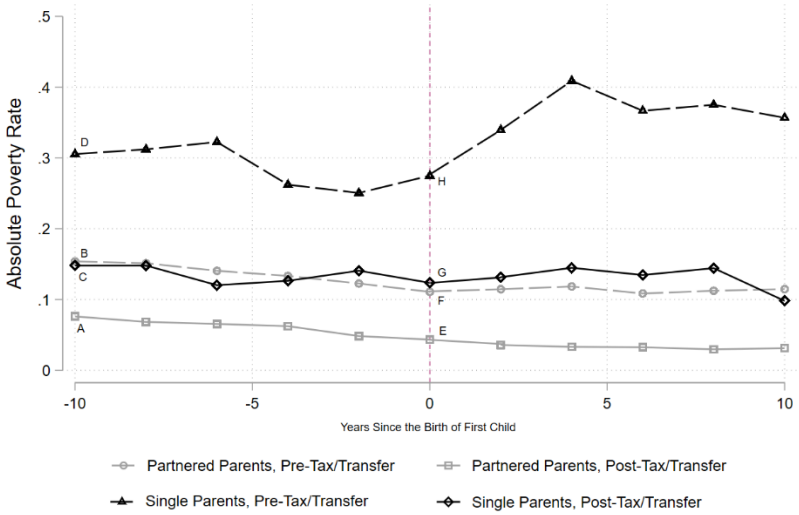
	A) Likelihood of being in the sample in t-10	B) Likelihood of being in the sample in t+10
Child Poverty	0.0475***	-0.0690***
	(0.00433)	(0.00649)
Constant	0.864***	0.597***
	(0.00153)	(0.00229)
Observations	63,801	63,744
R-squared	0.058	0.036

Notes: Authors' own calculations based on PSID data. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Controls include year fixed effects.

Appendix J. Alternative Results Using an Absolute Poverty Measure

We replicate our main decomposition analysis using the PSID Census Needs Standard variable that sets the threshold for poverty based on sex of household head, family size, the number of persons in the family under age 18, and the age of the householder.

Figure J1. Long-term trends in poverty among parents

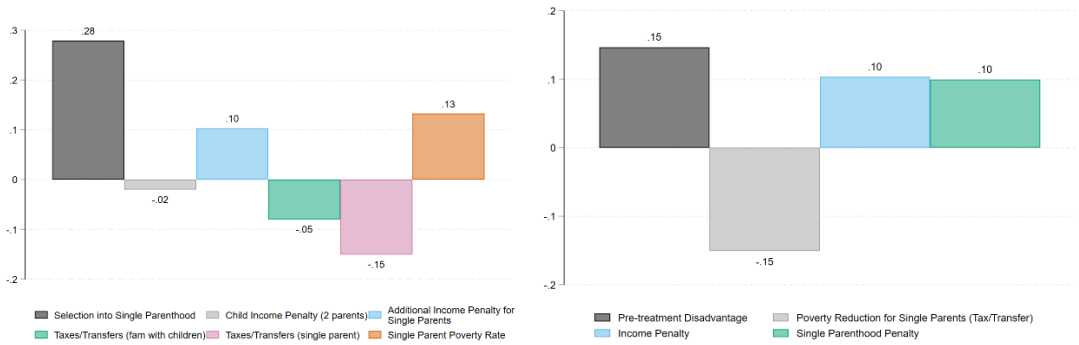


Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. We exclude individuals who are observed for less than 2 waves of data collection before and after the treatment time (i.e., the birth of their oldest child). A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's income is below the poverty threshold. We present results for every second year because the PSID started collecting data only every second year since 1997.

Figure J2. Decomposition of single-parent poverty

(a) Poverty Rate

(b) Poverty Penalty



Notes: Authors' own calculations based on PSID data. The sample includes all individuals who are observed 10 years before and after the birth of their oldest child. A single parent is defined as an adult (over 18 years old) who lives alone with children – the sample of single parents is composed of those who comply with this definition for at least 2 waves of data collection before their first child turns 11 years old. Poverty is measured as a binary outcome indicating if an individual's income is below the poverty threshold. The poverty rate is the average poverty in the single-parent group. The poverty penalty is the difference between the post-tax/transfer poverty rate of single parents minus that of partnered parents. The decomposition in Section (a) follows Equation 4 and the one in Section (b) follows Equation 5.