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Trends in Income Insecurity Among U.S. Children, 1984–2010

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Abstract Has income insecurity increased among U.S. children with the emergence of an employment-based safety net and the polarization of labor markets and family structure? We study the trend in insecurity from 1984–2010 by analyzing fluctuations in children's monthly family incomes in the Survey of Income and Program Participation. Going beyond earlier research on income volatility, we examine income insecurity more directly by analyzing income gains and losses separately and by relating them to changes in family composition and employment. The analysis provides new evidence of increased income insecurity by showing that large income losses increased more than large income gains for low-income children. Nearly one-half the increase in extreme income losses is related to trends in single parenthood and parental employment. Large income losses proliferated with the increased incidence of very low incomes (less than $150 per month). Extreme income losses and very low monthly incomes became more common particularly for U.S. children of nonworking single parents from the mid-1990s.

Keywords Income insecurity · Income volatility · Poverty · Unemployment · Children

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Introduction

How has income insecurity evolved among U.S. children? One line of research has found that income volatility has increased for American workers and households from the 1970s to the 2000s (Dynan et al. 2012; Gottschalk and Moffitt 2009; Jensen and Shore 2015; Shin and Solon 2011). Recounting these trends, researchers and popular writers have claimed that insecurity has increased in the American labor market and family life (Gosselin 2008; Hacker 2006; Kalleberg 2011). Another line of research has examined the effects of cash transfers and other programs on the incomes of poor single parents who are often tenuously attached to the labor market (Moffitt 2015; Shaefer and Edin 2013). Trends in income volatility and income-support policy together suggest that income insecurity may have increased, particularly for low-income U.S. children.

Although there are indications of increasing economic risk for workers and households, the problem of income insecurity for children is especially compelling. Families that experience large gains and drops in income may find it difficult to plan for the future, resulting in psychological distress, indebtedness, inconsistent consumption, and underinvestment in children (Catalano 1991; Gorbachev 2011; Sullivan et al. 2000; Yeung et al. 2008). Income instability adds to parental stress and chaos in the home environment (Hill et al. 2013). Household resources may also be diverted from children's health and development to cover basic needs in cases of unexpected reductions in incomes (Brooks-Gunn and Duncan 1997; Sandstrom and Huerta 2013). Thus, children's economic insecurity is important not just for understanding well-being but also for explaining life chances and intergenerational mobility (Hardy 2014).

Although children's income insecurity may have long-lasting effects on mobility and inequality, we know of no study that has analyzed its trends. Most research has studied samples of workers or households rather than children. Moreover, prior research on income volatility and income transfer effects are not directly informative about income insecurity. We define *income insecurity* as the risk of income loss faced by families as they encounter the unpredictable events of social life (Western et al. 2012). Most studies of income volatility have failed to distinguish income losses from income gains. Such studies have typically documented income dynamics but bracketed unemployment and family dissolution as sources of income loss (e.g., Gottschalk and Moffitt 2009; Haider 2001; Jensen and Shore 2015; Shin and Solon 2011). Research on income transfer effects has typically examined income levels but not changes in income, thus quantifying the effects of policy on inequality rather than insecurity (Fox et al. 2015; Shaefer and Edin 2013).

In this article, we study trends in children's income insecurity with successive panels of the Survey of Income and Program Participation (SIPP) from 1984 to 2008. Our research builds on earlier work in three main ways. First, we use quantile regressions to separately study income losses and gains, focusing on large losses rather than average volatility. Second, drawing on research on poverty dynamics, we link income losses and gains to family composition and employment and their dynamics. In our regression framework, we are able to decompose the trend in income losses into components

related to demographic characteristics and to shifts in employment and family structure. Third, instead of focusing just on low-income children, we contrast trends in economic losses for children across the income distribution.

Analyzing four-month changes in children's monthly family income, we find that extreme changes in income at the 5th and 95th percentiles increased from the mid-1990s. The largest increase in extreme income changes is found among low-income children, for whom 5th percentile income losses increased more in absolute magnitude than 95th percentile income gains. Nearly one-half the excess growth in extreme income losses among low-income children is associated with changes in family composition and employment. Although a few studies have reported increased volatility among low-income or otherwise disadvantaged workers and households (e.g., Dynan et al. 2012), we capture insecurity more directly by separating extreme losses and gains. We further trace large income losses to the growing incidence of very low incomes (less than $150 per month), mostly among children with nonworking single mothers. Very low monthly incomes, burgeoning in the context of an employment-based safety net, are closely linked to extreme income insecurity among low-income children.

Analyzing Children's Income Insecurity

Although few studies have mapped trends in children's income insecurity, researchers have examined three related areas. First, a large literature has analyzed trends in income volatility for workers and households. Second, studies of income and poverty dynamics have estimated the effects of job loss and union dissolution. Finally, income trends have been linked to the changing character of work and families and to developments in income-support policy.

Research on Income Volatility

Although the analysis of income insecurity has specifically explored the risk of economic loss, much of the related research has examined volatility—the variance of positive and negative income changes. A large descriptive literature has studied trends in income volatility, mostly analyzing annual changes in men's earnings. In an influential study, Gottschalk and Moffitt (1994) partitioned earnings inequality in panel data into a permanent variance based on stable differences across workers and a transitory variance resulting from annual changes in earnings. The transitory variance, reflecting the volatility of men's earnings, was greater in the 1990s and 2000s than in the 1970s (Gottschalk and Moffitt 2009; Haider 2001; Shin and Solon 2011). Similar trends in economic instability were reported for broader income measures, including family incomes and total labor incomes (Dynan et al. 2012; Gottschalk and Moffitt 2009: Shin and Solon 2011; cf. Dahl et al. 2011).

Earnings and income volatility were interpreted to reflect the economic risk and insecurity of workers and households. Hacker (2006:2) asserted the connection between volatility and insecurity most strongly, claiming that American families "face rapidly growing economic insecurity." Economists interpreted the trend more cautiously but acknowledged that research on income volatility grew from a concern for the

possibility of increased risk in economic life (Haider 2001:801; Shin and Solon 2011:981).

Descriptive studies of earnings volatility have provided some evidence for increased economic insecurity but suffer from three main limitations. First, transitory variances treat income gains and losses as equivalent sources of economic instability. The hardship of economic insecurity, however, results from income losses rather than gains. Hardship is deepened when losses in income in one month are not fully compensated in the next. Thus, analysis of economic insecurity should describe asymmetry of income volatility by analyzing gains and losses separately.

Second, transitory variances average across large and small income fluctuations. However, income insecurity is more severe when income losses are larger. More than the magnitude of average fluctuations, catastrophic economic events producing large losses are especially important markers of insecurity. Large income losses are most likely to curtail consumption, cause default on financial obligations, and feed stress and anxiety. A few studies have recently gone beyond studying average variability by examining unusually large fluctuations. Analyzing annual changes in household income, Dahl et al. (2011) found that instability was unchanged from 1985 to 2005 except at the tails, at the 1st and 99th percentiles. Jensen and Shore (2015) also reported evidence of increased volatility at the extremes, at the 95th and 99th percentiles of squared changes in men's labor incomes (see also Jensen and Shore 2011; Shin and Solon 2011). Motivated by an interest in income insecurity, we follow a similar approach to studying children's family incomes, analyzing extreme rather than average income fluctuations.

Finally, transitory variances provide an incomplete indicator of economic insecurity because the sources of income fluctuations remain unexplained. A predictable income loss though a planned retirement, for example, is analyzed no differently from lost earnings through an unexpected layoff. However, understanding economic insecurity requires studying the events that precipitate large economic losses. The predictability of the events driving income fluctuations lies on a continuum. Still, estimating large income losses associated with unemployment or divorce, for example, introduces more information than the usual analysis of transitory variances and indicates points of acute insecurity in economic and family life.

Adverse Events

To focus directly on income insecurity, we estimate the income losses associated with adverse events. DiPrete (2002) called these "trigger events"—significant incidents in the life course that might drive downward mobility. The idea of an event-driven stratification process has been more common in poverty studies than in stratification research. Researchers, focused on the economic well-being of families, often traced income declines into poverty to two events: unemployment and divorce (Burkhauser and Duncan 1988).

Research on the income effects of unemployment has estimated the earnings lost by workers laid off in manufacturing plant closures or business downturns (Couch and Placzek 2010; Jacobson et al. 1993; see Kletzer 1998 for a review). Studies of displaced workers have suggested that the initial income losses associated with unemployment can be disastrous, greatly exceeding the family's usual economic fluctuations. The

effects of job loss were found to be asymmetric given that unemployment produces a larger income loss than the income gain obtained by reentering the labor market. At the bottom of the income distribution, job loss precedes downward mobility into poverty for about 40 % of nonelderly families (Cellini et al. 2008).

Despite evidence for large and immediate earnings losses from unemployment, reductions in family income may be smaller. Families can function as small risk-pooling units in which spouses take on more paid work if the breadwinner becomes unemployed (Oppenheimer 1997). Safety net programs also limit the income loss of joblessness, and the protective effect is greater for disadvantaged families. Households without liquid wealth or working spouses have thus been found to be most reliant on unemployment benefits (Chetty 2008). Data from recessions indicate that unemployment insurance reduced the poverty rate by 1 to 2 percentage points in 1982 and 2010 (Bitler and Hoynes 2013).

While the labor market produces one source of children's income insecurity through parental unemployment, the family provides another through relationship dissolution. Although the economic effect of divorce on family income may work chiefly through the lost earnings of the separating spouse, family dissolution is not reducible to family unemployment. Departing spouses may pay child support or provide other economic assistance. Remaining spouses are constrained in how much time they can supply to the labor market when there are fewer hands to cover the workload at home. Partly because of these domestic responsibilities, divorce has gendered effects, reducing family income by 10 % to 20 % for women (who tend to retain custody of children) but little for men (Holden and Smock 1991; McManus and DiPrete 2001). As more children live with cohabiting (rather than married) parents, the instability of cohabiting relationships also contributes to children's economic insecurity (Tach and Eads 2015). Like unemployment, union dissolution is regularly found to be a major poverty risk for women and children (Bane and Ellwood 1986; Burkhauser and Duncan 1988).

Research on the income effects of unemployment and union dissolution has suggested that income insecurity may be greatest among low-income families. Employment is more precarious among low-skill workers (Kalleberg 2011). Confronted with family health problems and other domestic responsibilities, low-income single parents also face additional pressure to leave employment to care for children (Corman et al. 2005; Earle and Heymann 2002). Low-income couples are more likely to have children within cohabiting unions than their higher-income counterparts, and these unions are less stable than marriages (Bramlett and Mosher 2002). Low-income married couples are also at relatively greater risk of divorce than higher-income married couples (Kim 2010). Because of the high risk of unemployment and union dissolution, we expect that income insecurity will be greatest at the bottom of the income distribution, and much of it will be explained by family structure, employment, and their dynamics.

Research on the economic effects of unemployment and union dissolution has two main implications. First, family and labor market events may have asymmetric effects on income. Losing an earner, for example, may produce larger losses than the gains produced by new employment. Second, to assess the economic insecurity of family members, income measurement should include nonmarket sources. Public benefits and other sources of assistance, such as child support, might compensate for the income losses associated with unemployment or union dissolution.

Inequality Trends and Institutional Change

Whereas economic insecurity is reflected in income losses associated with adverse events, trends in insecurity are shaped by the surrounding socioeconomic and institutional context. The polarization of labor markets and family structure combined with the expansion of employment-based income support are likely associated with increased income insecurity, especially for low-income children.

Labor market polarization is reflected in the significant growth of the employment share of low-wage jobs since the 1990s (Autor and Dorn 2009). Research on job quality—measuring health benefits, hours, overtime, and workplace safety—has found that working conditions deteriorated in low-pay jobs as wage inequality increased (Fligstein and Shin 2004; Hamermesh 1999; Kalleberg 2011). If health and sickness benefits and workplace safety stabilize incomes by keeping workers on the job and compensating lost earnings, we can expect greater income instability for low-pay workers and their families. Low-pay jobs are also more likely to be temporary or part-time, and irregular working hours may also add to income insecurity.

Parallel to changes in the labor market, family structure also became more polarized. Since the 1970s, nonmarital birth rates and single parenthood increased among parents with little schooling (McLanahan 2004). Marriage was increasingly concentrated among couples with more income and schooling, and marriage itself became more stable, at least since the early 1990s (Ellwood and Jencks 2004; McLanahan 2009). Single-parent families may be more economically insecure because family income is more dependent on a single adult, and the risk-pooling of married couples is not possible. Consistent with the economic instability of single-parent families, cross-sectional analysis shows greater income inequality among single-parent than two-parent families (Western et al. 2008). As single-parenthood increased, cohabiting unions, at high risk of dissolution, also became more common for low-income parents (Bumpass and Lu 2000).

Trends in work and family composition together suggest that income insecurity is not just greater at the bottom of the income distribution; insecurity has likely increased for low-income families. Income insecurity may have increased for low-pay workers, and family life may have become more economically unstable with rising rates of single parenthood and cohabitation. Suggestive of increased insecurity among low-income children, income instability increased greatly in low-income households and in households with unmarried parents (Dahl et al. 2011), contrasting with the popular picture of rising insecurity in the middle class (Hacker 2006; Sullivan et al. 2000). The term "middle class" often lacks a precise definition for popular commentators. Our analysis explores the entire income distribution by examining trends in large income losses for low-income, middle-income, and high-income children.

The effects of bad jobs and fragile families may be attenuated by insurance institutions—public or private—that help spread the costs of adversity across a broad risk pool. Although income support for disadvantaged families has not declined, safety net programs increasingly depend on paid employment (Moffitt and Scholz 2010). The Earned Income Tax Credit (EITC)—paying a yearly lump-sum benefit to low-income working parents to working families—grew through the 1990s to become a major income support program (Mendenhall et al. 2012). In addition, work requirements for income support programs have expanded since the early 1970s, culminating in the

1996 welfare reform with passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). Research on the effects of welfare reform has found that employment increased among poor single mothers, and average incomes did not decline as assistance to low-income families became more closely linked to employment (Blank 2004; Grogger and Karoly 2008; Moffitt 2008). Although average incomes were sustained, income insecurity may have increased as low-income families came to rely more on earnings than cash transfers (Bania and Leete 2009).

In sum, we hypothesize that shifts in economic and institutional contexts are associated with increasing income insecurity, but income insecurity has likely increased most for low-income families. Much of the increased insecurity is likely related to employment, family composition, and their dynamics. The polarization of labor markets and family composition has curtailed risk-pooling through the reduced availability of employer-provided benefits and within families through increased rates of single parenthood and cohabitation. Income support programs have also become more closely tied to employment, perhaps further increasing insecurity by exposing low-income families to income losses through unemployment.

Analyzing Income Insecurity

To analyze income insecurity, we distinguish income losses from income gains and associate adverse events with unusually large income losses at the tail of the distribution of income fluctuations. The analysis fits quantile regressions to the change in children's log monthly family income. Quantile regressions relate independent variables to different percentiles of a dependent variable (Koenker 2005). For example, whereas least squares regression predicts the mean of a dependent variable given independent variables, median quantile regression predicts the median. Particularly useful for our analysis, the quantile regressions estimate extreme income losses associated with unemployment and family dissolution.

When insecurity is acute, the income losses associated with unemployment and union dissolution will be large, falling in the tails of the distribution of income changes. We focus on extreme quantiles of income changes at the 5th and 95th percentiles because income instability has grown most at the tails of the distribution of income fluctuations, but we also explore the sensitivity of our results across a range of quantiles. At the 5th and 95th percentiles, coefficients from the regressions can be interpreted as describing extreme losses or gains that happen 5 % of the time. Analyzing extreme quantiles also protects against the effects of survey redesign. SIPP income questions were significantly changed in 2004 (Moore 2007), increasing the number of small or zero income changes compared with earlier years. By analyzing extreme quantiles, our estimates are robust to the effects of survey redesign, which are concentrated in the middle of the distribution of income changes.

Independent variables for the analysis of children's income instability fall into three broad categories. First, all children are assigned to one of three income classes defined by terciles of the family income distribution measured in the baseline survey. A key objective of the analysis is to understand the relative increase in income instability for low-income children in the bottom third of the income distribution. Second, we also control for socioeconomic variation measured by parental age, education, and race and

ethnicity. Third, we estimate the effects of employment and family composition with static measures of the number of earners and married or cohabiting parents and with dynamic measures of family and employment change. Dynamic measures, including indicators for job loss and romantic union dissolution, capture the association between adverse events and income fluctuations. Because the income effects of changing employment may not work symmetrically, we include separate indicators for gaining an earner and losing an earner. Similarly, separate indicators are included for entry and exit from marriage and cohabitation. (Predictors are detailed in Online Resource 1.)

If log income for child i at wave t of the survey is written y_{it}, then the dependent variable is the change in log income, $\Delta y_{it} = y_{it} - y_{it-1}$. In the log scale, the change in income is interpreted as a proportionate change. For example, a change in log income of .10 is approximately a 10 % increase. With the log transformation, a given drop in raw income is larger on the log scale for the poor than the rich. Thus, a $500 drop in monthly income from $2,000 to $1,500 will be larger on the log scale (.29) than a drop from $6,000 to $5,500 (.09). The difference of logs captures the idea that a fixed change in raw income has a relatively larger impact on the well-being of the poor. The log transformation is standard in the analysis of earnings and income volatility but alternative approaches like the arc percentage transformation (Dahl et al. 2014) yield similar results to those reported below.

Our main empirical strategy compares two models. First, we write a baseline quantile regression as a function of two dummy variables indicating low-income and high-income children, L_i and H_i, where middle-income children form the reference category. Note that the three income classes are time-invariant, measured at the baseline survey before income dynamics are observed. We write a basic model for a given quantile, say the 5th percentile:

$$Q(\Delta y_{it}) = \beta_{00} + \beta_{01}L_i + \beta_{02}H_i,$$

where Q is a conditional quantile function analogous to the conditional expectation of linear regression. Analysis of conditional regression quantiles allows us to compare the relative magnitudes of income fluctuations, conditional on a child's income category (see Killewald and Berak 2014). When the chosen quantile is small, such as the 5th percentile, the low-income coefficient, β_{01}, describes large income losses for low-income children compared with middle-income children. Controlling for a vector of family and employment characteristics and demographic covariates, $\mathbf{x}_{it}$, may help explain the relatively large income losses of low-income families:

$$Q(\Delta y_{it}) = \beta_{10} + \beta_{11}L_i + \beta_{12}H_i + \mathbf{x}_{it}' \gamma.$$

The difference in low-income coefficients between the covariates model and the basic model, $d = \beta_{11} - \beta_{01}$, describes how much relatively large income losses among low-income children are explained by family composition, employment, and demographic covariates. Changes in the difference, d, from the 1984 to the 2008 panel quantifies the extent to which increases in the size of extreme income losses among low-income children are related to the shifting associations with family structure, employment, and demographics. Regression coefficients in this analysis have a descriptive interpretation,

indicating the relative size of income fluctuations at different points in the distribution of income instability.

The current analysis extends earlier research on income volatility by focusing on children, estimating separate models for income gains and losses, highlighting large gains and losses, and introducing covariates for changes in family composition and employment. Decomposing the change in coefficients across SIPP panels quantifies the trend in income instability statistically attributable to covariates. An alternative approach might study not the magnitude of income changes at a given percentile but rather the probability of an income change of a given magnitude (Dynan et al. 2012; Shin and Solon 2011). This alternative approach transforms income fluctuations into two discrete categories: small changes and large changes. A key advantage of the current approach is that all the available information on income fluctuations is used to estimate regression quantiles. In any case, a parallel analysis estimating the probability of large income decline yields similar results to the current analysis. We also examine the probability of a 90 % drop in incomes in the upcoming exploratory analysis of children with very low incomes.

Data and Measures

The SIPP provides a continuous series of national panels drawn from U.S. households. Households are reinterviewed every four months, and each panel ran for up to 4 years. The core survey asks about labor force participation, income and program participation, and household and demographic characteristics for the previous four months. The survey thus yields a monthly income history for all household members. We analyze eight panels of the SIPP that were initiated from 1984 to 2008, covering all years from 1984 through 2010. The shortest panel ran for 28 months (seven waves), so the analysis examines only the first seven waves of each panel to ensure consistency in the measurement of income instability. Several panels contain oversamples of poor families. Sample weights adjust for oversampling and other features of the sampling design. The weights generally made little difference to either descriptive statistics or the analytical results, and all the results reported here are unweighted. We analyze family income data from all children under age 15 in the baseline month of each SIPP panel.

The design of the SIPP allows an analysis of changes in incomes at higher frequency than in earlier studies. Largely because of data constraints, most studies analyzed changes in annual incomes yearly or every two years (e.g., Dynan et al. 2012; Jensen and Shore 2015; Shin and Solon 2011). The daily consumption of a household is more closely linked to short-term fluctuations, especially for low-income families who have little savings. For such families, swings in income from one year to the next may be less informative about the economic uncertainties of everyday life than changes in income every few months. We examine this short-term economic insecurity by analyzing the changes in monthly income every four months. Although high-frequency fluctuations are observed in the survey, the SIPP monthly income data suffer from "seam bias," in which reports of monthly income are strongly correlated within waves of the survey but more weakly correlated across waves. We reduce the effects

of seam bias by taking just one income observation from each wave, eliminating the within-wave correlation of incomes. Other strategies, such as averaging incomes within waves, yield similar results.

The dependent variable is constructed from a monthly family income measure. In this child-level analysis, family income is coded for each child by summing the total personal income for all family members in a household. To compare the economic well-being of children in different-sized families, we standardize income by the square root of family size.[1]

Total personal income includes labor income plus income from other sources. Dahl et al. (2011) found that earnings imputation in the SIPP increases measured income volatility, spuriously inflating the trend in volatility as imputation increases over time. We drop observations with imputed earnings from this analysis. Other income includes business, capital, and farm income; income from child support payments; and income from transfer programs (including near-cash benefits, such as food stamps), social insurance, and other sources.[2]

As eligibility for income support became more closely linked to employment, EITC receipt became more common for low-income families. EITC receipt has not been regularly collected in the SIPP, nor has it been incorporated in earlier studies of income instability. We impute EITC income to the first period of the calendar year using the National Bureau of Economic Research TAXSIM model (Feenberg and Coutts 1993). (We also impute the value of the Child Tax Credit, a per-child tax credit that is refundable for low-income families.) Families who receive the EITC often use part of their tax refunds as self-insurance (in the form of savings, debt repayment, or consumer durables) to cover shocks to incomes and expenses (Halpern-Meekin et al. 2015). To model the potential income-smoothing function of the EITC, we estimated three separate models in which the tax refund was (1) added in a single month, (2) spread over three months, and (3) spread over six months when a majority of EITC recipients have spent all their refund (Mendenhall et al. 2012). Our results were the same regardless of which method we used to add the tax refund into monthly incomes, suggesting that our findings are not sensitive to different assumptions about the time frame over which tax refunds are spent. That said, our study focuses on income insecurity, which is distinct from consumption insecurity (Keys 2008). Even if the way that tax refunds are spent did not affect long-run trends in income insecurity, it may still have important implications for consumption insecurity (Athreya et al. 2014).

One strength of the SIPP is that income transfers, such as food stamps, are paid monthly, and monthly data are collected on incomes (Ratcliffe et al. 2011). Still, survey respondents generally underreport transfer payments (Meyer et al. 2009). If transfer programs smooth income fluctuations, survey data will tend to overestimate volatility.

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[1] Children's incomes are not directly observed, and family income could be standardized in different ways to approximate their economic well-being (see Atkinson et al. 1995; Buhmann et al. 1988). We explored standardization by family size, the poverty threshold, and regression adjustment for family size. Different methods of standardization of incomes yielded similar results, which were themselves similar to the analysis of unadjusted incomes.

[2] The value of housing subsidies is not asked directly in the SIPP and is not included among near-cash benefits. Imputing the value of housing benefits also requires estimation of local market rents. With the current focus on income changes, estimation of the value of housing subsidies may introduce variation as an artifact of updates in the schedule of market rents.

Comparison of household surveys shows that the SIPP has a relatively low rate of underreporting compared with other surveys, such as the PSID and the Current Population Survey (CPS), that have also been used to study income fluctuations. In addition, trends are the key focus of this analysis and underreporting of transfers in the SIPP appears to be largely untrended (Meyer et al. 2009), so measurement error is unlikely to confound the estimated trend in income insecurity.

To ensure comparability of measurement and the robustness of the results, we also conducted several other data edits and sensitivity checks. We studied the deletion of EITC imputed income, excluding top incomes in the 99.5th percentile, and fit alternative models of squared income changes. The main results are insensitive to these adjustments. All incomes were converted to 2005 dollars with the Personal Consumption Expenditures (PCE) deflator, a price deflator based on a bundle of consumer goods and services excluding food and energy.[3] A small number of negative incomes (0.05 % of the total sample) were omitted from the analysis, and incomes of 0 were set to 1 dollar, setting income to a lower bound of 0 on the log scale.

Descriptive statistics on children's monthly family incomes are reported for each of the eight panels in Table 1. (Incomes in this table are unadjusted for family size to show trends in the distribution of family income.) The 33rd and 67th percentiles of the income distribution yield three income classes for children in the lower, middle, and upper terciles. By the 2008 panel, low-income children came from families that made no more than $30,000 on an annualized basis, compared with high-income children, whose families made at least $68,000. Income thresholds are measured in the baseline survey of each panel, so the measurement of income terciles and the three income classes are observed prior to the income dynamics of key interest. Measured in this way, the income classes are not confounded with the income dynamics being analyzed.

Unemployment and union dissolution pose the main threats to income security in our analysis. Employment is measured by the number of adult earners. Earners include adult family members who report positive labor market income for a given month. Table 2 reports descriptive statistics on employment. The average level of employment in U.S. families, indicated by the number of earners, is steeply stratified by income and has steadily increased since 1984. In the bottom third of the distribution, employment has increased from slightly below to around 1.0 earner per child. Among high-income children, well over one-half live in two-earner families. The increase in employment results from increasing rates of maternal employment across the income distribution.

Family composition is measured by whether a child lives with a single parent, cohabiting parents, or married parents. Cohabitation is coded from the SIPP household roster recording household members of opposite sex sharing living quarters with a child's parent. Later SIPP panels directly ask about cohabitation, and the indirect measure based on the household roster only slightly exceeds the direct measure. For consistency, we use the indirect measure throughout. The descriptive statistics in Table 2 also indicate the steep income stratification of single parenthood. Nearly all high-income children live in two parent-families, and more than 40 % of low-income children live with a single parent.

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[3] The PCE data series are available online (https://research.stlouisfed.org/fred2/series/PCEPI).

Table 1 Descriptive statistics on monthly family incomes used to define three income classes in the analysis of income instability among U.S. children, SIPP 1984–2008 panels

SIPP Panel	Family Income ($)			Sample Size
	33rd %	Median	67th %	
1984	2,166	3,300	4,481	10,504
1987	2,414	3,574	4,792	6,206
1990	2,249	3,407	4,672	11,592
1993	2,142	3,341	4,757	10,583
1996	2,167	3,395	4,943	18,152
2001	2,499	3,857	5,488	15,653
2004	2,494	3,882	5,616	19,355
2008	2,369	3,811	5,676	16,942

Notes: Monthly family incomes are in 2005 dollars. Sample size is the number of minor children in Wave 1 of each panel.

Results

The trend in children's income instability is shown by boxplots of the distribution of changes in log income, Δy, for each income tercile of each SIPP panel from 1984 to 2008 (Fig. 1). The boxes in the figure span the 25th to 75th percentiles of the distribution of Δy, while the whiskers extending from each box show the 5th and 95th percentiles. Changes in children's log family income, Δy, are most dispersed at the bottom of the income distribution, indicating that low-income children face more income instability than their middle- and high-income counterparts. Income instability also increased significantly for low-income children but remained relatively unchanged for middle- and high-income children. Among low-income children, the dispersion of changes in log income became larger from 1996 onward, most markedly and at the tails of the distribution for very large income changes occurring 5 % of the time. For low-income children in the 1984 panel, large income drops at the 5th percentile were about –1.0 log points, compared with –2.0 log points by the 2008 panel. Illustrating the growth in extreme income changes, the growth in 5th percentile income instability (1 log points) was about 50 % larger than growth in 25th percentile income instability (0.5 log points). The growing volatility of family incomes is also illustrated by the transitory variance. A conventional analysis partitioning income inequality in the SIPP shows the transitory variance more than doubled in size from the 1984 to the 2008 panel (see Online Resource 2, Table S1).

Although extreme income losses grew more than extreme income gains for low-income children, mean family income rose within each income class. For low-income children, average standardized family income increased from $1,007 in the 1984 panel to $1,311 in the 2008 panel. To the extent that child well-being depends positively on mean income but negatively on large income losses, improvements in the average

Table 2 Descriptive statistics for key independent variables in quantile of regression analysis of the change in log monthly income.

SIPP Panel	Earners in Family (mean)	4-Month Prob. of Family Job Loss (%)	Single-Parent Family (%)	4-Month Prob. of Family Divorce or Separation (%)	N
Low-Income Children					
1984	0.85	12.06	44.91	2.55	3,340
1987	0.92	12.11	39.20	2.29	2,067
1990	0.83	12.38	48.45	2.57	3,866
1993	0.77	12.68	46.39	2.63	3,527
1996	0.91	8.97	52.42	2.54	5,459
2001	0.96	10.20	51.22	2.03	3,868
2004	1.01	7.00	51.06	1.79	5,693
2008	0.94	7.47	47.35	1.70	4,841
Middle-Income Children					
1984	1.44	7.87	11.51	0.93	3,387
1987	1.54	6.24	11.01	1.20	2,074
1990	1.49	7.53	15.86	1.36	3,866
1993	1.50	7.31	14.46	1.28	3,545
1996	1.54	5.17	15.99	1.01	5,477
2001	1.52	5.35	19.27	1.21	3,878
2004	1.56	3.77	17.28	0.89	5,743
2008	1.48	4.87	17.71	1.04	4,965
High-Income Children					
1984	1.65	5.74	5.37	1.09	3,376
1987	1.70	5.33	3.99	0.69	2,065
1990	1.70	4.95	5.58	0.79	3,860
1993	1.69	4.44	4.23	0.69	3,511
1996	1.74	2.93	5.55	0.56	5,451
2001	1.73	3.79	4.90	0.68	3,866
2004	1.73	2.10	5.18	0.48	5,753
2008	1.69	3.01	5.06	0.56	4,932

Notes: Single-parent families are defined as those with a parent or guardian who is neither married nor cohabiting. The probability of losing an earner is measured for the four months between interviews for children with at least one earner in the family. The probability of divorce or separation is measured for the four months between interviews for children living with a married or cohabiting parent. Sample size (N) is the number of child respondents in an income class in a particular survey.

income of low-income children were offset by the trend in negative income instability (see Online Resource 2, Table S2).

Quantile Regression Analysis

Quantile regression analysis for the 5th and 95th percentiles of the change in children's log monthly income is reported in Tables 3 and 4. We begin by fitting a regression that
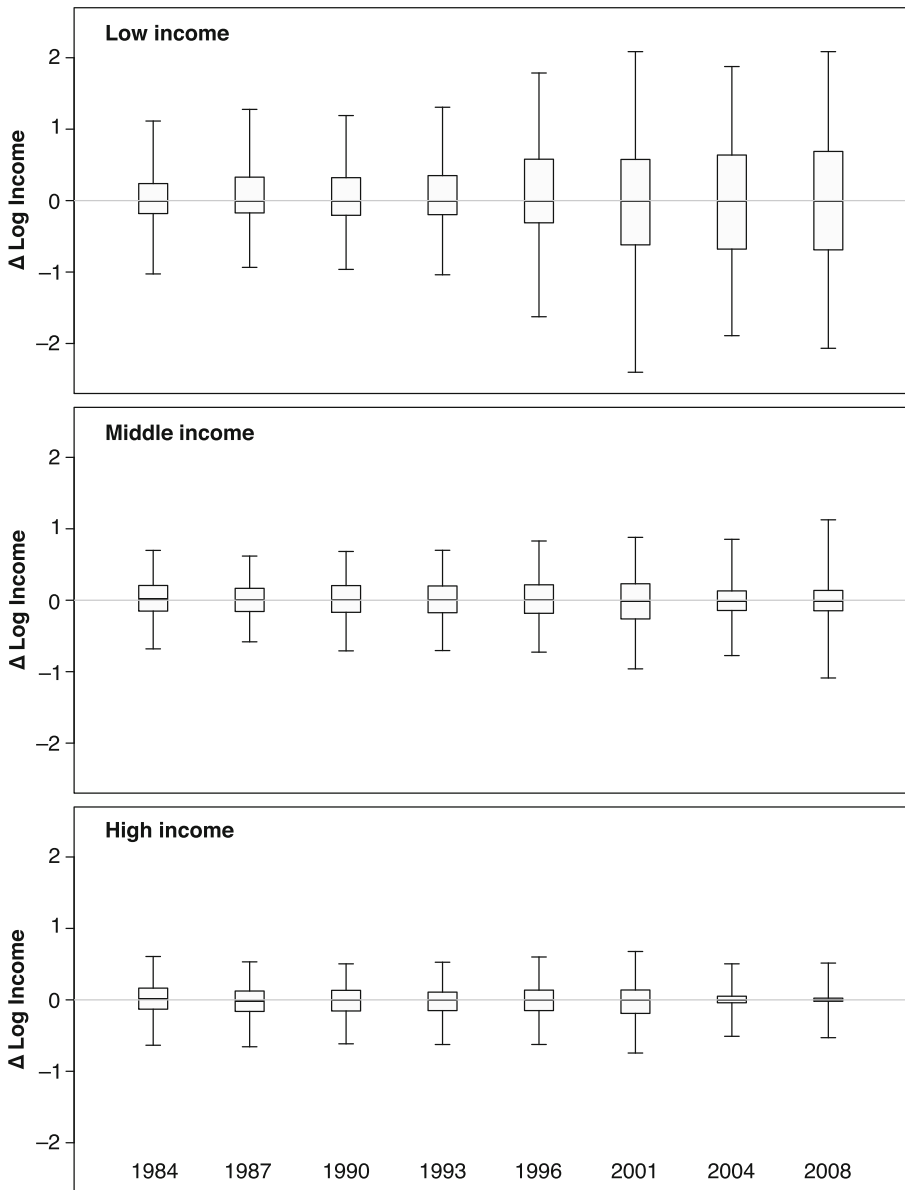
Fig. 1 Boxplots of the change in monthly log income for low-income, middle-income, and high-income children, SIPP 1984 to 2008. Error bars indicate the 5th and 95th percentiles of the distribution of the change in log family income

includes no covariates except for dummy variables indicating high-income and low-income children. In the 1984 panel, large declines in monthly incomes are 30 % larger for low-income children than middle-income children (.29 = 1 – exp[–.345]). Summing the intercept and the low-income coefficient indicates that in 1984, monthly incomes for low-income children fell by nearly two-thirds or more about 5 % of the time (.64 = 1 – exp[–.681 – .345]). The trend in the intercept indicates that large income losses grew

from the 1996 survey for children in the reference group at the middle of the income distribution. However, increases in the low-income coefficient indicate that extreme income instability rose even more for children at the bottom of the income distribution. By the 2004 and 2008 panels, the low-income coefficient was about three times larger than in 1984.

The lower panel of Table 3 reports coefficients for changes in employment and family composition in models that also control for demographics and family and employment characteristics. (See the Online Resource 2, Tables S5 and S6, for quantile regression results including only static variables.) Two effects dominate the results. Large drops in income (at the 5th percentile of Δy) are strongly associated with job loss and union dissolution. In 1984, an income drop of more than 90 % was associated with job loss about 5 % of the time (.90 = 1 – exp[–2.282]). The job-loss coefficient tends to grow over time, and the three largest estimates of the effects of losing an earner come from the 2000s. By the 2008 panel, a 5th percentile fall in family income with job loss is estimated to shrink family income by 98 %, almost to 0 (.98 = 1 – exp[–3.706]). In short, while the rate of family job loss is cyclical—going up in recessions—extreme income losses associated with unemployment show a secular increase, roughly doubling from the 1980s to the 2000s.

Table 3 also shows that large income losses for children tend to be associated with separation for married couples but not so for cohabitors. In the late 1980s and early 1990s, large income losses accompanying divorce tended to be larger than the effects of losing an earner from the family. The effects of divorce were generally smaller by the 2000s, particularly in comparison with the effects of unemployment. Extreme economic losses for children in cases of divorce may have become smaller because mothers who get divorced are working more than in the past. The increased prevalence of child support orders and shared custody may also moderate extreme income instability accompanying divorce or separation.

Table 4 reports the quantile regression results at the 95th percentile. The model with only the income tercile indicators shows that large income gains for low-income children are proportionately larger than for middle-income children. In 1984, large income increases among low-income children were about 50 % larger (1.52 = exp[.416]) than those for children in the middle of the income distribution. The low-income coefficients at the 95th percentile also grew over time, indicating a rise in positive income instability for low-income children. Compared with results for the 5th percentile, low-income children sometimes experienced larger extreme income increases than declines, but the magnitude of extreme income declines has grown more over time.

The lower panel of Table 4 adds covariates to the quantile regressions. Just as losing an earner is closely related to large income losses, adding an earner to the family is associated with large income gains. In 1984, the entrance of a family member into employment increased income gains by nearly five times at the 95th percentile (5.07 = exp[1.624]). The income boost associated with new employment also grew over time. By the 2008 panel, coefficients for large income gains in the month of new employment are more than twice as large as in the 1984 panel. We also find some evidence for extreme income gains when parents get married, but significant coefficients are estimated only for four of the eight SIPP panels, and coefficients for marriage are relatively small in the 2000s.

Table 3 Quantile regression analysis (5th percentile) of the change in log family income, SIPP 1984–2008 panels

	1984	1987	1990	1993	1996	2001	2004	2008
With No Covariates								
Constant	−0.681	−0.582	−0.709	−0.705	−0.727	−0.961	−0.775	−1.088
	(41.55)	(34.59)	(55.78)	(60.22)	(72.38)	(61.86)	(84.44)	(74.03)
Low income	−0.345	−0.353	−0.254	−0.334	−0.899	−1.442	−1.116	−0.979
	(11.63)	(10.69)	(11.08)	(17.13)	(26.89)	(14.03)	(25.49)	(23.43)
High income	0.046	−0.074	0.094	0.079	0.102	0.216	0.265	0.559
	(2.13)	(3.25)	(5.67)	(4.69)	(6.60)	(9.29)	(17.71)	(24.52)
Including Covariates								
Constant	−0.437	−0.679	−0.752	−0.572	−0.717	−2.352	−1.851	−2.003
	(2.76)	(6.25)	(6.17)	(3.88)	(5.26)	(6.42)	(8.15)	(7.43)
Low income	−0.296	−0.282	−0.215	−0.259	−0.806	−0.772	−0.882	−0.652
	(10.71)	(9.97)	(10.31)	(13.72)	(27.48)	(15.94)	(32.86)	(22.96)
High income	0.040	−0.112	0.009	−0.012	0.096	0.056	0.177	0.284
	(2.75)	(7.68)	(0.56)	(0.79)	(6.93)	(3.51)	(12.35)	(17.98)
Lose an earner	−2.282	−0.965	−1.226	−1.529	−2.884	−4.849	−3.873	−3.706
	(4.83)	(5.96)	(17.96)	(7.58)	(7.34)	(71.54)	(24.30)	(9.70)
Gain an earner	0.109	0.102	0.076	0.110	0.027	−0.109	−0.006	−0.201
	(4.60)	(3.13)	(2.30)	(3.85)	(0.99)	(2.55)	(0.16)	(3.68)
Begin marriage	0.309	0.131	0.307	0.005	0.370	−0.079	0.106	−0.623
	(4.98)	(0.48)	(5.11)	(0.09)	(4.56)	(0.78)	(3.56)	(2.03)
End marriage	−1.075	−2.299	−4.090	−4.945	−3.194	−0.866	−1.715	−1.099
	(6.27)	(0.78)	(84.37)	(14.36)	(6.49)	(1.47)	(13.85)	(2.02)

Table 3 (continued)

	1984	1987	1990	1993	1996	2001	2004	2008
Begin cohabiting	0.312	0.269	0.369	0.067	0.186	−0.303	−0.046	0.216
	(3.07)	(4.47)	(7.32)	(0.33)	(3.47)	(0.98)	(0.11)	(3.13)
End cohabiting	0.060	0.205	−0.721	0.061	−0.538	−0.528	0.029	0.338
	(0.43)	(0.30)	(1.49)	(0.35)	(2.48)	(0.67)	(0.08)	(1.01)
N	44,700	31,009	57,048	51,583	71,595	44,947	65,180	54,918

Notes: Absolute *t* statistics are shown in parentheses. Coefficient standard errors are based on a robust covariance matrix to adjust for clustering of observations in families. Models with covariates also include controls for parents' age, age squared, race, marital status and cohabitation, and the number of earners in the family (results for other covariates are reported in Online Resource 2, Table S3). Sample size is the total number of children-months in the sample.

Table 4 Quantile regression analysis (95th percentile) of the change in log family income, SIPP 1984–2008 panels

	1984	1987	1990	1993	1996	2001	2004	2008
With No Covariates								
Constant	0.698	0.618	0.683	0.699	0.829	0.880	0.853	1.126
	(50.04)	(43.99)	(72.26)	(53.22)	(63.09)	(43.53)	(67.79)	(59.70)
Low income	0.416	0.659	0.508	0.608	0.957	1.205	1.024	0.959
	(13.56)	(19.52)	(21.02)	(24.59)	(29.88)	(14.10)	(24.54)	(22.68)
High income	−0.091	−0.086	−0.179	−0.172	−0.229	−0.203	−0.348	−0.611
	(4.91)	(4.13)	(14.40)	(9.71)	(13.55)	(8.62)	(17.90)	(25.48)
Including Covariates								
Constant	0.431	0.555	0.382	0.560	0.941	1.943	1.415	2.095
	(2.64)	(5.51)	(3.29)	(3.28)	(5.92)	(6.69)	(6.72)	(8.13)
Low income	0.343	0.455	0.398	0.462	0.869	0.783	0.831	0.756
	(13.93)	(15.09)	(17.04)	(22.14)	(36.53)	(16.16)	(20.43)	(24.74)
High income	−0.078	−0.052	−0.153	−0.130	−0.134	−0.086	−0.210	−0.343
	(4.55)	(3.03)	(11.69)	(7.88)	(10.30)	(5.21)	(12.94)	(16.96)
Lose an earner	−0.160	−0.256	−0.172	−0.162	−0.101	−0.141	0.087	−0.226
	(5.94)	(9.12)	(4.83)	(5.66)	(1.47)	(2.02)	(0.79)	(3.02)
Gain an earner	1.624	1.753	1.406	1.521	3.369	4.811	3.401	4.377
	(7.96)	(5.20)	(10.89)	(8.02)	(6.77)	(34.03)	(11.26)	(38.25)
Begin marriage	2.379	4.680	4.169	4.198	1.705	−0.054	1.309	0.119
	(1.77)	(3.99)	(51.54)	(7.42)	(1.89)	(0.16)	(10.53)	(0.97)
End marriage	−0.149	0.107	−0.212	−0.118	−0.160	−0.137	0.011	−0.151
	(3.10)	(2.01)	(3.44)	(1.43)	(1.96)	(0.69)	(0.08)	(0.68)

Table 4 (continued)

	1984	1987	1990	1993	1996	2001	2004	2008
Begin cohabiting	0.191	−0.124	−0.213	−0.114	1.290	−0.514	2.910	2.977
	(0.27)	(0.28)	(2.50)	(0.11)	(2.56)	(0.18)	(23.61)	(2.54)
End cohabiting	−0.112	−0.389	−0.290	−0.319	−0.216	1.132	−0.457	−0.193
	(0.30)	(7.65)	(5.00)	(1.47)	(0.23)	(0.63)	(2.27)	(0.91)
N	44,700	31,009	57,048	51,583	71,595	44,947	65,180	54,918

Notes: Absolute *t* statistics are shown in parentheses. Coefficient standard errors are based on a robust covariance matrix to adjust for clustering of observations in families. Models with covariates also include controls for parents' age, age squared, education, race, marital status and cohabitation, and the number of earners in the family (results for other covariates are reported in Online Resource 2, Table S4). Sample size is the total number of children-months in the sample.

In sum, analysis of extreme income changes reveals growth in the relative income instability of low-income children. Large income losses associated with unemployment have increased, but large income gains have also grown in size with new employment. Comparing the 1980s and early 1990s with the 2000s, income insecurity—reflected in the income losses accompanying unemployment—also grew more than income gains.

Can family and employment dynamics and other socioeconomic variation explain increased income instability among low-income children? Figure 2 reports changes in the low-income coefficients for three models: (1) a model with no controls, describing changes in relative income instability measured by the quantile regression coefficient for low-income children; (2) a model including controls for socioeconomic characteristics, including parental age, race/ethnicity, and education; and (3) a model that adds predictors for employment and family composition and employment and family dynamics.

Panel a of Fig. 2 shows the low-income coefficients for a 5th percentile quantile regression on the change in children's log income. With no controls, the coefficient falls by more than 0.6 log points from the 1984 to the 2008 panel, indicating significant growth in extreme income losses for low-income children compared with middle-income children. When age, race/ethnicity, and education of parents are controlled, the low-income coefficient falls about 0.5 log points, indicating that changing associations with demographic characteristics explain about 16 % of the increase in relative income instability of low-income children. Adding controls for employment and family structure, including the adverse events of unemployment and divorce and separation, explains about 45 % of the increase in extreme income losses. Static and dynamic measures of family composition and employment explain roughly equal shares of the growth in extreme income losses for low-income children. Panel b of Fig. 2 shows the trend in relative income instability of low-income children at the 95th percentile of income changes. The increase in positive income instability is smaller than the increase in negative instability. About 24 % of the increase in extreme monthly income gains is associated with family composition and employment. Thus, extreme negative income instability increased more than extreme positive instability. Large income losses grew most for low-income children, and nearly one-half the excess increase in negative income instability for low-income children is explained by parental employment, family composition, and demographic characteristics.

Table 5 summarizes the decomposition of the increase in relative income instability for low-income children. To study the sensitivity of the results at the 5th and 95th percentiles, the table also reports analyses at the 10th, 20th, 80th, and 90th percentiles. Large increases in extreme income instability for low-income children can be seen in both positive and negative directions. However, income instability increased more in the negative direction at the 5th percentile than in the positive direction at the 95th percentile. Relative income instability increased less at the more central percentiles. Thus, growing income instability for low-income children is not the result of a general growth in the variability of monthly incomes. Rather, very large income fluctuations became larger. Family composition and employment explain little of the trend in moderate income instability. Instead, family composition and employment have the greatest explanatory power for the increase in extreme income losses of low-income children. These results are consistent with the growing declines in income with parental job loss.
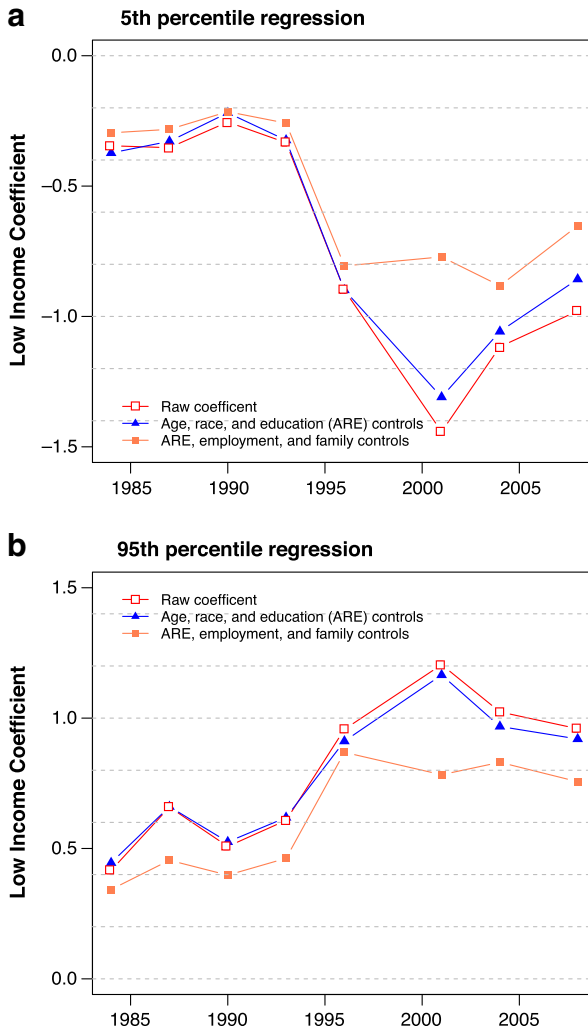
Fig. 2 Change in the low-income coefficient for three quantile regressions on the 5th and 95th percentiles of the change in children's log monthly income: (1) including no controls, (2) controlling for age, race, ethnicity, and education, and (3) controlling for age, race, and education, family structure, employment, and family and employment dynamics

Analysis of Incomes for the Children of Single Parents

The growth in income instability begins with the 1996 SIPP panel and is concentrated among low-income children. Although all low-income children experienced growth in extreme income instability, tabulations of income changes, Δy, show that the increase in 5th percentile income losses for children of single parents (0.99 log points) was nearly double the increase for children in two-parent households (0.56 log points). Rising income instability may be related to the 1996 welfare reform and increasing employment (and the risk of unemployment) among poor single mothers.

Table 5 Decomposition of the change in relative income instability of low-income children from the 1984–2008 SIPP panels

Regression Quantile	Change in Income Instability	Percentage of Change Explained by:	
		Age, Race, Ethnicity, and Education (AREE)	AREE, Family Composition, and Employment
5th	−0.634	23.6	43.7
10th	−0.669	16.5	25.5
20th	−0.667	13.4	17.4
30th	−0.283	13.8	23.8
70th	0.317	5.5	23.2
80th	0.690	13.2	10.5
90th	0.662	19.8	15.3
95th	0.543	12.6	23.9

Notes: The change in relative income instability is measured by the change in quantile regression coefficients for low-income children, $\Delta\beta = \beta_t - \beta_{t-1}$. Controlling for socioeconomic characteristics yields an adjusted coefficient, β^*, and an adjusted change in relative income instability, $\Delta\beta^* = \beta^*_t - \beta^*_{t-1}$. Change in instability explained by covariates is given by $100 \times (\Delta\beta - \Delta\beta^*)/\Delta\beta$.

Unemployment among single mothers may produce large earnings losses that are not immediately compensated by either targeted transfers or unemployment insurance. Shaefer and Edin (2013) provided supporting evidence in their analysis of the growth of extreme poverty since 1996. They found that the proportion of households with children living on less than $2 per day increased by between 50 % and 80 % from 1996 to 2011, depending on the measurement of income supports. We explore this further by tabulating the prevalence of extremely low incomes—below $150 per month—and the prevalence of very large income losses, greater than 90 % of monthly incomes (–2.3 log points).

The relationship between very low incomes and extreme income losses can be seen by defining two indicators: (1) l_{it}, which indicates observations where family-size adjusted monthly income, y_{it}, is less than $150; and (2) e_{it}, which indicates extreme income losses, $\Delta y_{it} < -2.3$, equivalent to a 90 % drop since the previous period. Table 6 shows the average monthly rates of very low incomes, l_{it}, and extreme income losses, e_{it}. For all children, the average monthly incidence of very low income increased significantly from the 1984 to 2008 panel. The incidence of very low incomes was two to four times higher for single-parent children than two-parent children. The monthly rate of very low incomes also increased proportionately faster for single-parent children (Table 6, column 1). Extreme income losses become more common with the increased incidence of very low incomes. Among single-parent children, about 4 % experienced a 90 % income loss by the 2008 panel compared with 1.5 % of two-parent children (Table 6, column 2). Reflecting the relatively high incomes of two-parent children, a 90 % income drop coincides with a month of very low income nearly two-thirds of the time, compared with about one-third of the time for single-parent children (Table 6, column 3). Among single-

Table 6 Percentage distribution of children with low income (less than $150 per month) and large income drops (greater than 90 %), SIPP 1984–2008 panels

SIPP Panel	Income <$150	Income Loss >90 %	>90 % Income Loss for Children With Incomes: <$150)	≥$150
Children Living With a Single Parent				
1984	4.09	1.39	32.76	0.10
1987	4.37	1.55	35.86	0.11
1990	5.13	1.16	22.16	0.08
1993	5.69	1.61	26.01	0.12
1996	7.55	2.71	35.79	0.26
2001	9.54	4.83	43.44	0.74
2004	8.70	3.29	36.18	0.33
2008	10.31	3.97	31.80	0.77
Children Living With Two Parents				
1984	1.61	1.06	55.56	0.22
1987	1.15	.77	58.98	0.14
1990	1.25	.79	62.19	0.12
1993	1.21	.76	55.15	0.14
1996	1.87	1.17	63.09	0.16
2001	2.59	1.71	60.92	0.28
2004	1.94	1.33	61.14	0.22
2008	2.36	1.51	57.04	0.24

parent children, the increased incidence of very low incomes is associated with nearly one-half the 185 % increase in the incidence of extreme income losses.[4] In short, the rate of extreme income losses widely increased, but this trend was concentrated among single-parent children, for whom the increasing incidence of large income losses accompanied the proliferation of very low incomes.

To further explore the links among single-parenthood, employment, and income insecurity, Table 7 reports the rate of very low incomes and large income losses for employed and nonworking (unemployed or out of the labor force) single parents. Very low incomes became more common among all children in single-parent families, but the absolute increase in the rate of very low income was six times higher for children with single parents who were not working. By the 2008 SIPP, approximately one-quarter of children with

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[4] Let $\bar{l}$ be the average monthly proportion of children with very low income. These children experience extreme income losses at a rate of $e_l = E(e_{it}|l_{it} = 1)$. The remainder of children experience extreme income losses at the rate of $e_n = E(e_{it}|l_{it} = 0)$. The rate of extreme income losses for all children is $\bar{e} = \bar{l}e_l + (1 - \bar{l})e_n$. Focusing just on single-parent children, and fixing the share with very low income at the 1984 level, $\bar{l}_{1984} = .0409$, while keeping other parameters at 2008 levels yields a hypothetical rate of extreme losses of 2.04 % compared with the observed rate of 3.97 %.

Table 7 Percentage distribution of children with low income (less than $150 per month) and large income drops (greater than 90 %), by parental employment and single parenthood, SIPP 1984–2008 panels

SIPP Panel	Parent Not Employed		Parent Employed	
	Low Income (<$150)	Income Loss >90 %	Low Income (<$150)	Income Loss >90 %
Children Living With a Single Parent				
1984	8.40	2.73	0.82	0.39
1987	9.71	3.12	0.64	0.49
1990	10.93	2.05	0.95	0.51
1993	11.63	3.02	0.60	0.40
1996	17.34	4.87	2.96	1.69
2001	28.46	11.06	3.39	2.63
2004	25.42	7.92	3.56	1.83
2008	26.54	7.65	3.40	2.37
Children Living With Two Parents				
1984	13.54	9.59	1.07	0.70
1987	10.35	7.66	0.77	0.50
1990	12.83	5.81	0.74	0.57
1993	10.18	4.93	0.69	0.52
1996	16.82	8.37	1.40	0.94
2001	34.82	17.51	1.53	1.20
2004	22.36	10.01	1.51	1.16
2008	23.73	10.47	1.47	1.16

Notes: Parents who are not employed are out of employment in the current month, including the newly unemployed and those who have reported not working for at least two survey waves.

nonworking single parents had family incomes less than $150 per month. Whereas fewer than 3 % of children with a nonworking single parent in the 1984 SIPP suffered a 90 % income drop, the number had climbed to more than 7 % by 2008, with the increase beginning in 1996. Two-parent children with no working parents also experienced high rates of negative income instability, but such children are a minority in the population, accounting for 20 % to 30 % of those in jobless families.

These results incorporate many coding decisions for the construction of child incomes and the calculation of income changes. We examined a wide range of alternative specifications involving different income measures, family size adjustments, and data transformations. We also studied sensitivity of results to topcodes, extreme values for family income, and imputed wage and salary income. The reported results are broadly robust to a wide variety of specifications and coding decisions. EITC imputation introduces strong assumptions about the timing of payments. An alternative analysis that omits EITC imputation also yields the main findings that extreme income losses increased among low-income children after 1996, incomes losses grew more than income gains, and the growth of extreme income losses is associated with unemployment in low-income, single-parent families. (Quantile regression results, omitting EITC imputation, are reported in the Online Resource 2, Tables S7 and S8.)

Discussion

Research on income volatility has generally found greater variability in earnings and household incomes in the 1990s and 2000s than several decades earlier. Research on anti-poverty policy has described the expansion since the 1990s of an employment-based system of income support. We drew insights from both lines of research to analyze the trend in income insecurity for American children. We found that the instability of family income for American children increased from the 1980s to the 2000s. Although we found evidence of increased income instability among middle-income children, the largest increase in instability was concentrated among children in families making less than $30,000 per year. Increased income instability resulted not from a general increase in the size of income fluctuations but rather from an increase in the magnitude of extreme changes around the 5th and 95th percentiles of the distribution of income changes.

The increase in extreme income fluctuations began in the mid-1990s and grew asymmetrically, increasing more for income losses than for income gains. The relative growth in large income losses is likely to moderate any improvement in well-being related to the increases in the mean income of low-income children. Nearly one-half the excess growth from 1984 to 2010 in extreme income losses among low-income children can be explained by patterns of employment and family composition and the unequal distribution of union formation and employment changes. Large income losses associated with unemployment grew substantially over the period. These trends provide new evidence of the increased income insecurity of low-income children and are further supported by exploratory analysis showing large increases in the incidence of very low incomes concentrated among children with single parents. The results point to unemployment rather than union dissolution as the immediate source of burgeoning income insecurity, but family composition is centrally important because extreme income losses have grown most in nonworking single-parent families.

Rising income insecurity among low-income children follows changes in antipoverty policy and economic conditions, which required more employment from poor parents and exposed them to an increasingly precarious low-wage labor market. Changes in anti-poverty policy required more employment from poor parents following welfare reform and the expansion of the EITC in the 1990s. As low-income mothers moved into the labor force, they were increasingly exposed to the risks of unemployment and the cycles of the broader economy. Low-income parents who remained outside the labor market had less access to income support programs than in the era before welfare reform. Thus, children in single-parent families increasingly experienced both very low incomes and extreme negative income instability. The increase in insecurity among low-income children between the 1996 and 2001 panels was larger than the increase between the 1996 and 2004 panels. Economic recession in 2001 may have increased insecurity further after welfare reform, but even in the following economic recovery, incomes were more unstable for low-income children than in the 1990s.

To better understand these trends, future research should explore the relative roles of employment and income support programs for the economic security of low-income families. The role of employment could be examined by analyzing the relative income

shares of transfer, tax credit, and labor market earnings and their contributions to income instability. Unlike monthly transfer benefits (such as food stamps) that tend to smooth the flow of income, a lump sum EITC payment might add to measured income volatility (the effect of EITC on consumption has been studied by McGranahan and Schanzenbach 2013). The analysis of income insecurity could further examine whether EITC effectively relieves economic uncertainty among low-income families that are tenuously attached to the labor market. Tax credits, food stamps, and housing subsidies have moderated the growth in extreme poverty (Shaefer and Edin 2013). Research on extreme poverty could usefully be extended by considering the effects of income supports on month-to-month income insecurity.

The close links among very low incomes, unemployment, and extreme income insecurity also suggest a renewed focus on the working lives of poor families and their access to income-support programs. For the intermittently unemployed, a low level of income support during spells of joblessness may be related to the speed of enrollment, the uptake rate for programs, and conditions of eligibility. For the persistently unemployed, the level of benefits and rules for eligibility seem important conditions for the increased prevalence of incomes near or below subsistence levels. In short, recent evidence of growing numbers of children with very low income suggests new forms of acute economic hardship among those who remain outside the labor market in the era of the employment-based safety net.

These results also expand our understanding of changes in social stratification in the period of rising economic inequality. The growing spread of incomes between rich and poor is often taken as the most important recent trend in U.S. social stratification. In one account, the overall shape of the income distribution changed little, but the top tail pulled away from middle with only modest effect on major social and economic indicators (Burtless and Jencks 2003). In our analysis, rising inequality is just one of several large-scale economic and demographic transformations traversed by American society in the last three decades. Family life became more polarized, with marriage less prevalent at the bottom but more stable at the top. Family levels of employment, however, have widely increased and become more stable. Despite the growing attachment of low-income families to the labor market, incomes became more unstable. As poor and near-poor families increasingly depended on employment income and employment-based income assistance, average incomes were preserved but extreme instability increased. Everyday life became more unstable for poor children as the fortunes of their parents became more closely tied to the fluctuations of the labor market.

More generally, this analysis contributes to a theory of family stratification in which the labor market, the family, and the welfare state combine to shape the economic life of children. In our dynamic perspective, income fluctuations are driven by discrete events that affect the livelihood and composition of families. These events are distributed and experienced differently for rich and poor. The ups and downs of monthly incomes correspond closely to economic life as it is lived in contrast to the more abstract social fact of the income distribution. Low-income families experienced much greater economic instability than the affluent over the entire period of our analysis, 1984 to 2010. Children's incomes rose and fell with their parent's job loss and divorce, and these events too were concentrated in the bottom one-third of income distribution.

These results show that those on the lower rungs of the economic ladder are distinguished not just by low incomes but also by the risk of slipping off.

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