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Does Welfare Inhibit Success? The Long-Term Effects of Removing Low-Income Youth from the Disability Rolls[†]

By Manasi Deshpande*

I estimate the effects of removing low-income youth with disabilities from Supplemental Security Income (SSI) on their earnings and income in adulthood. Using a regression discontinuity design based on a 1996 policy change in age 18 medical reviews, I find that youth who are removed from SSI at age 18 recover one-third of the lost SSI cash income in earnings. SSI youth who are removed and stay off SSI earn on average $4,400 annually, and they lose $76,000 in present discounted observed income over the 16 years following removal relative to those who do not receive a review. (*JEL* I30, I38, J14)

Supporters of welfare programs defend them as vital lifelines for those who face barriers to work, while critics charge that these programs create perverse incentives to qualify and perpetuate dependency. Encapsulating this debate is the controversy over the US Supplemental Security Income (SSI) program, a program that provides cash payments and Medicaid eligibility to low-income children and adults with disabilities and the aged elderly. After three decades of rapid expansion, SSI is now the largest nonwork-based cash welfare program in the United States, paying about $50 billion each year to 8 million recipients, including 1.3 million children.[1] SSI has been singled out by policymakers and the media for potential perverse incentives,

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[1] Annual federal spending is $54 billion on the work-based earned income tax credit and $80 billion on the near-cash Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps). CBO projects that outlays for SSI payments will grow from $51 billion in 2012 to $68 billion by 2022, but outlays as a share of GDP will decline from 0.33 percent to 0.27 percent over this time period. See CBO (2012, 2013).

with critics arguing that it discourages educational achievement and human capital formation, especially in children and young adults.[2]

In this paper, I address a long-standing question about SSI that reflects the broader debate over means-tested programs: how much does SSI inhibit labor market success and self-sufficiency among youth? There has been little work on the long-term effects of disability programs on children and youth, even though their formative stage of development might make them most vulnerable to any perverse incentives or discouragement of achievement.[3] To answer this question, I study the long-term effects of removing low-income youth with disabilities from SSI on their earnings and income in adulthood. I take advantage of a policy change in the Personal Responsibility and Work Opportunity Act (PRWORA) of 1996—more commonly known as welfare reform—that increased the number and strictness of medical reviews for 18-year-olds.[4] The law applied only to children with an 18th birthday after August 22, 1996—the date of PRWORA enactment—creating a discontinuity in the likelihood of removal via age 18 medical review at that date. I implement a regression discontinuity (RD) design based on this change using administrative data from the Social Security Administration (SSA). To the best of my knowledge, this is the first paper to estimate the causal impact of welfare removal on the large and critical population of youth with disabilities and to follow them over multiple decades.

I find that SSI youth who are removed from the program increase their earnings modestly and, as a result, experience a large drop in observed income levels. SSI youth who are removed via age 18 review recover just one-third of the lost SSI income in earned income and are less likely to apply for Social Security Disability Insurance (SSDI). They lose $21,000 in present discounted total observed income over the 16 years following removal, a 20 percent decrease relative to those who are not removed at age 18. The parents of removed SSI youth do not increase their earnings or unearned income in response to the 18-year-old's removal, leading to an imprecisely estimated drop in total household income.

Because many of the youth who did not receive an age 18 review leave SSI in adulthood, it is also useful to interpret the results through contemporaneous SSI enrollment. I estimate that SSI youth who receive a review and stay off SSI earn on average $4,400 per year in adulthood, an increase of $3,000 relative to those who do not receive a review and stay on SSI. SSI youth who stay off SSI lose on average $76,000 in present discounted observed income over the following 16 years, a 70 percent drop relative to those who do not receive a review.

Despite large average losses, removal does spur some SSI youth to earn at full-time, full-year levels. The likelihood of maintaining annual earnings above $15,000—approximately the full-time minimum wage annual earnings level—increases by an average of 12 percentage points for those who remain off of SSI, relative to those who do not receive an age 18 review. This effect also increases over

[2] See, e.g., Patricia Wen, "The Other Welfare," *Boston Globe*, December 12, 2010; Nicholas Kristof, "Profiting from a Child's Illiteracy," *New York Times*, December 7, 2012; and US House of Representatives (2011).

[3] Several recent studies have examined the effects of adult disability programs on labor supply and human capital, including Bound (1989); Chen and van der Klaauw (2008); von Wachter, Song, and Manchester (2011); Maestas, Mullen, and Strand (2013); French and Song (2014); Moore (2015); and Autor et al. (2015). Kubik (1999); and Coe and Rutledge (2013) study children with disabilities.

[4] The official name of 18-year-old medical reviews is "age 18 redeterminations," and the official name of child and adult medical reviews is "continuing disability reviews."

time, which suggests that SSI removal may have long-term effects on earnings, perhaps through skill accumulation or increased taste for work. However, using survey and administrative data on the broader disadvantaged youth population, I find that removed SSI youth have lower earnings levels and less robust earnings growth than their disadvantaged but nondisabled counterparts.

SSI removal may also have effects on the volatility of income, since stable SSI payments are replaced by earnings as the primary source of income and there is substantial earnings volatility at the bottom of the earnings distribution. Income volatility has welfare implications if recipients are risk averse and if intertemporal consumption smoothing is costly.[5] I find that the within-person coefficient of variation of income quadruples, putting average income volatility for removed SSI youth at the ninetieth percentile of the control group distribution. This increase in income volatility suggests that SSI and other welfare programs may increase recipient welfare through income stabilization effects.

The SSI context is a useful setting for studying the effects of welfare programs for several reasons. First, SSI is the largest cash welfare program in the United States, with annual expenditures more than double those of the Temporary Assistance to Needy Families (TANF) program (CBO 2013). Second, SSI youth are at risk for poor life outcomes. SSI children grow up in households with incomes near or below the poverty line, generally with fewer than two parents. Mental conditions other than intellectual disability—including ADHD, speech delay, and autism spectrum disorder—have accounted for nearly all of the expansion in the SSI children's program in the past two decades and now constitute the primary diagnosis for the majority of SSI children. SSI youth with mental conditions other than intellectual disability have school drop-out rates of 45 percent and arrest rates of 28 percent (Hemmeter, Kauff, and Wittenburg 2009). Former SSI children have employment rates of just 30–50 percent as adults, depending on the cohort (Davies, Rupp, and Wittenburg 2009). Third, SSI is a relevant context for studying the income stabilization effects of welfare and disability programs, since SSI recipients on average have low education levels and therefore employment opportunities generally limited to jobs with high turnover and unpredictable hours.

The findings in this paper inform long-standing issues in the debate over welfare programs. I find no evidence that SSI holds most recipients back from self-sufficiency or that removing even relatively healthy SSI recipients would lead to higher income in the long run. Instead, removing SSI youth leads to a large reduction in observed lifetime income. I also find that SSI may afford a greater amount of insurance than suggested by previous analyses because of its income stabilization benefits.

The paper proceeds as follows. Section I discusses the expected effects of SSI removal and previous work on welfare and disability programs. Section II describes the SSA administrative data, SSI program details, and my empirical strategy. Section III presents estimates of the first stage for SSI enrollment and IV estimates for own earnings and income as well as household earnings and income. Section IV puts the findings in context by comparing removed SSI youth to other disadvantaged

[5] Edin and Lein (1997, p. 67) write that poor single mothers in their study "had to weigh the utility of work against the real possibility that a subsequent layoff or reduction in hours could lead to serious material hardship. The jobs these mothers could get were among the least reliable in the US economy."

youth, and the 1996 SSI youth cohort to more recent cohorts. Section V discusses welfare implications and Section VI concludes.

I. Framework and Literature

A. *Background on the SSI Program and SSI Children*

SSI provides monthly cash payments to children and adults who qualify on the basis of disability or old age and have limited income and assets. The maximum federal benefit amount for an individual is $733/month ($8,796/year) in 2016, and most states provide a small supplement. SSI provides categorical Medicaid eligibility in most states, except for ten states that use stricter criteria to determine Medicaid eligibility for the disabled; seven other states require SSI recipients to submit a separate Medicaid application to the state. SSI makes recipients eligible for the Supplemental Nutrition Assistance Program (SNAP, formerly food stamps) in all states. Duggan, Kearney, and Rennane (2015) provide a comprehensive review of the SSI program and literature.

Under current law, SSI children must requalify for the program as adults by undergoing an age 18 medical review. About 40 percent of all SSI children and two-thirds of SSI children with mental conditions other than intellectual disability are removed from SSI at the age of 18 (Hemmeter and Gilby 2009). These high cessation rates are the result of differences in medical eligibility criteria for children and adults. For adults, disability is defined as an inability to work. Adults who earn above the "substantial gainful activity" limit ($1,130/month for non-blind individuals in 2016) are ineligible for disability benefits. Since children do not work, their eligibility for the SSI program is based on age-appropriate activity. Children must have "marked and severe functional limitations" that limit their activities, which can include social interaction and school performance.[6] Conditions like ADHD may qualify a child for SSI because they limit age-appropriate activity, but they are less likely to qualify an adult unless they are severe enough to prevent work. Children who qualify on the basis of these conditions are more likely to be removed at 18.

In the SSI children's program, the income and assets of the parents are used to determine both financial eligibility and monthly benefit amount. Once a child turns 18, however, only the child's own income and assets are considered. The monthly SSI benefit amount is reduced based on income. After a $20 exclusion for any income source and an additional $65 exclusion for earned income, the monthly benefit is reduced by $1 for every $1 of unearned income, but by only $1 for every $2 of earned income. This puts the annual break-even point for earned income at about $18,000.[7] The SSI asset limit is $2,000 for an individual and $3,000 for a couple and excludes the value of a home and one vehicle.

[6] Social Security Act Sec. 1614, 42 USC. 1382c(a)(3).

[7] The SSI student earned income exclusion provides an additional exclusion for students who are under the age of 22 and work. Additional exclusions exist for various groups. If a child continues to receive in-kind support in the form of food or shelter after age 18, these may be considered unearned income for SSI purposes. SSI recipients are generally terminated after 12 consecutive months of having a zero benefit amount. Certain public assistance benefits like SNAP are not considered income for SSI purposes.

From my analysis of the 2008 Survey of Income and Program Participation panel, presented in online Appendix Table A.1, households with SSI children are disadvantaged by nearly every measure. Annual earnings are less than one-third of earnings for all households with children, and total household income is approximately one-half. The head of household is twice as likely to be a single mother and a high school dropout. Even relative to low-education households, SSI-child households have 50 percent lower earnings and 20 percent lower total income.

B. *Expected Effects of SSI Removal*

In this paper, I study the effects of removing SSI youth from SSI at the age of 18 on their earnings and income in adulthood. Neoclassical models of labor supply predict that earnings will increase through income and substitution effects associated with the loss of SSI cash income and categorical Medicaid and SNAP eligibility. Given that the maximum $9,000/year SSI benefit represents a large share of income for SSI recipients, the income loss is expected to increase earnings by inducing a shift from nonwork to work activity. In addition, the reversal of SSI's 50 percent marginal tax rate on earnings is expected to increase earnings. SSI may also have implicit incentive effects if recipients believe that human capital investment or work activity increases the likelihood of removal during medical reviews.

Bound (1989) is the first paper to estimate the labor supply effects of disability programs in the context of the Social Security Disability Insurance (DI) program, which has the same medical requirements as SSI but requires a work history, has higher benefit amounts, and treats recipient earnings differently than SSI. He uses the labor supply of denied DI applicants as an upper bound for accepted applicants, concluding that employment among DI recipients would be at most 30 percentage points higher had they been denied. Updating Bound's analysis, Chen and van der Klaauw (2008) find smaller employment effects for more recent DI applicants, while von Wachter, Song, and Manchester (2011) find similar effects to Bound (1989) for older cohorts and larger effects for younger cohorts. Maestas, Mullen, and Strand (2013) use variation in disability examiner leniency to estimate a reduced-form effect of DI on employment of 28 percentage points for applicants on the margin of program entry. French and Song (2014) estimate employment effects of a similar magnitude using variation in judge leniency, as does Moore (2015) for DI recipients whose eligibility based on drug and alcohol addiction was terminated as part of the 1996 welfare reform law. Neumark and Powers (1998) and Neumark and Powers (2000) study the effect of SSI on individuals who qualify on the basis of old age rather than disability, finding that SSI discourages preretirement savings and labor supply.

The loss of Medicaid eligibility as a result of SSI removal is also expected to increase earnings. Prior to the Affordable Care Act, in most states 18-year-olds who were removed from SSI did not qualify for Medicaid based on low income alone. Using self-reported survey data, Hemmeter (2011) estimates a Medicaid enrollment rate of 96 percent for youth who stay on SSI after age 18, versus 25 percent for those who are removed. Depending on the particular estimate, the value of Medicaid could increase the size of the income loss by 30–100 percent relative to cash benefits

alone, which may increase earnings through an income effect.[8] The loss of Medicaid can also increase earnings through a substitution effect if health insurance after removal is tied to work. Garthwaite, Gross, and Notowidigdo (2014) argue that their finding of a large labor supply response by nondisabled adults to Medicaid removal operates through this "employment lock" channel. The loss of Medicaid could also have long-term effects on earnings if it affects health and thereby productivity or the disutility of work.

The loss of food stamp eligibility is expected to induce similar responses. SSI recipients are categorically eligible for food stamps, while others must demonstrate eligibility based on income and assets. The 1996 welfare reform law limited food stamps for nondisabled adults without children, a condition that potentially applies to a large fraction of the largely male and minority SSI sample that I study. Similar to the Medicaid loss, the loss of food stamp eligibility through SSI removal could therefore increase labor supply through both income effects (lower food stamp receipt) and substitution effects (food stamp work requirement). Hoynes and Schanzenbach (2012) find modest effects of the introduction of food stamps on labor supply, with larger effects for single-mother-headed households.

Income and substitution effects have different normative and policy implications. From a normative perspective, substitution effects are distortionary because they change the relative prices of work and leisure, while income effects are non-distortionary because they reflect only an income transfer. From a policy perspective, understanding whether income or substitution effects dominate can increase the effectiveness of policies designed to encourage work. If income effects dominate, then the most effective way to encourage work is by cutting benefits; if substitution effects dominate, then reducing implicit or explicit marginal tax rates on earnings could be effective. Unfortunately, distinguishing between income and substitution effects is empirically challenging because most welfare and disability transfers are conditioned on no or minimal work. Deshpande (2016) uses the unique institutional context of the SSI children's program to distinguish between income and substitution effects in parental labor supply, and Gelber, Moore, and Strand (2015) use a regression kink design based on DI replacement rates to estimate income effects in that program. Both find evidence of large income effects. Due to the empirical challenges cited above, I do not distinguish between income and substitution effects in this paper. However, the small reduced-form estimate of the effect on earnings provides a meaningful upper bound on both effects.

Many criticisms of welfare programs have focused on the long-term or dynamic effects of these programs. In an influential thesis that contributed to the passage of the 1996 welfare reform law, Murray (1984, p. 9) argues that the effect of expanding the social safety net was to "make it profitable for the poor to behave in the short term in ways that were destructive in the long term." In economic parlance,

[8] Finkelstein, Hendren, and Luttmer (2015) use estimates from the Oregon health insurance experiment to estimate an annual value of Medicaid of $2,600 for the broader low-income population. The value of Medicaid may be larger for the disabled population if they have higher out-of-pocket expenditures without insurance, or if the covariance between the marginal utility of consumption and the Medicaid transfer is higher for them. The 1997 March Supplement to the Current Population Survey values Medicaid at $6,000 for individuals aged 20–34 who are on SSI.

these criticisms argue that income and substitution effects, by discouraging work today, could lead to long-term depreciation of human capital or a higher disutility of work. Murray's (1984) argument posits a behavioral model in which individuals myopically choose welfare over work even though work has higher long-term utility. This model allows for the possibility that SSI removal is welfare-improving for the individual, in contrast to neoclassical models in which—because the individual could have chosen not to be on welfare—removal necessarily decreases private welfare.

I also study the effects of SSI removal on family earnings and household income. Duggan and Kearney (2007) find using an event study design that parental labor supply does not change in response to a child's entry onto SSI. Deshpande (2016) uses an RD in SSI child medical reviews to find that parents respond to the removal of young children from SSI by increasing their earnings enough to replace the entire SSI income loss; in addition, parents and siblings are less likely to apply for disability as a result of the child's removal. Dahl, Kostol, and Mogstad (2014) find, using random assignment to disability judges in Norway, that a parent's entry onto disability insurance increases the likelihood of an adult child's participation in DI by 12 percentage points over 10 years.

This paper also studies the effect of SSI removal on the within-person and within-household volatility of income, which has welfare implications if recipients are risk averse and unable to smooth consumption intertemporally. There is a rich literature documenting earnings and household income volatility in the United States, with mixed evidence as to whether volatility has increased or decreased in recent decades (Dahl, DeLeire, and Schwabish 2011; Ziliak, Hardy, and Bollinger 2011; Dynan, Elmendorf, and Sichel 2012; Hardy and Ziliak 2014). Income volatility is higher for low-income households because of larger earnings fluctuations (Hardy and Ziliak 2014; Morduch and Schneider 2014). Several studies demonstrate that the progressive tax and transfer system in the United States reduces income volatility by responding to shocks in income (Dynarski and Gruber 1997; Kniesner and Ziliak 2002a, b; Blundell, Pistaferri, and Preston 2008). Blundell and Pistaferri (2003) study specifically the role of the food stamp program in smoothing permanent shocks in income, and Low and Pistaferri (2015) show that the DI program insures against permanent shocks to health and the price of skills. This literature shows that social safety net programs stabilize income by *responding* to income shocks—for example, households apply for unemployment insurance, disability insurance, or food stamps after an income shock. I argue that these programs also stabilize income mechanically by making income shocks less likely in the first place. They do this by adding a large stable income stream (transfer payments) to a volatile income stream (earnings) and by reducing the magnitude of the volatile earned income stream through income and substitution effects.[9] I also contribute to the literature by estimating the magnitude of the causal effect of a transfer program on income volatility using exogenous variation.

[9] SSI may also reduce income volatility through its asset tests: because recipients cannot have substantial savings, they may be less likely to seek income sources that provide high income for temporary periods.

II. Data and Empirical Strategy

A. *Data*

I use confidential administrative data from the Social Security Administration. The Supplemental Security Record (SSR) provides demographic information on SSI children, including date of birth, sex, county code, primary and secondary diagnosis, application date(s), and decision date(s). The extract also includes monthly benefit history information starting from the inception of the program in 1974 up to 2013, including monthly payment status code and benefit amount. The SSR also identifies the parents of SSI children since SSA uses parental income and assets to determine program eligibility and the child's benefit amount.

I link SSR records to the Continuing Disability Review Waterfall File. This file gives information on medical reviews for children and adults, including age 18 medical reviews going back to 1996. Each medical review observation lists demographic information for the reviewed recipient and the date and outcome of the case at each level of adjudication.

I link children to their long-term outcomes using several SSA databases. From an extract of the Master Earnings File (MEF), I observe annual earnings up to 2012. These earnings include wage, salary, and tip income reported on W-2 and W-3 forms and self-employment income reported on 1040 Schedule SE forms. The Detailed Earnings File gives one record per worker per employer per year. The 831 records give SSI and SSDI applications up to 2013, and the Master Beneficiary Record (MBR) gives SSDI benefit history up to 2012. The Numident file documents date of death. Since the SSR identifies the parents of SSI children, I use the same data sources to link children to their parents' earnings, SSI and SSDI applications, SSI and SSDI benefits, and mortality. By linking SSR child records with the same parent, I also observe SSI application and receipt for siblings of SSI children as well as the adult earnings of siblings who are themselves on SSI at some point.

Although SSI in most states provides categorical Medicaid eligibility, SSA administrative data do not include information on Medicaid enrollment or utilization. In the online Appendix, I do a back-of-the-envelope calculation for Medicaid enrollment following the age 18 medical review using estimates from Hemmeter (2011). I then use estimates of the value of Medicaid from Finkelstein, Hendren, and Luttmer (2015) and the 1997 Current Population Survey.

Finally, I use other data sources to put my findings on SSI youth in context. Using the 2008 panel of the Survey of Income and Program Participation (SIPP), I compare the characteristics of households with SSI children to the characteristics of other households with children. I use the Continuous Work History Sample (CWHS), an administrative dataset of the earnings of a 1 percent sample of Americans, to calculate earnings volatility across the US earnings distribution. I use the National Longitudinal Survey of Youth-1997 (NLSY97) and SSA administrative data on denied child applicants to track earnings in broader disadvantaged populations. I tabulate descriptive statistics on the SSI youth population from the National Survey of SSI Children and Families (NSCF).

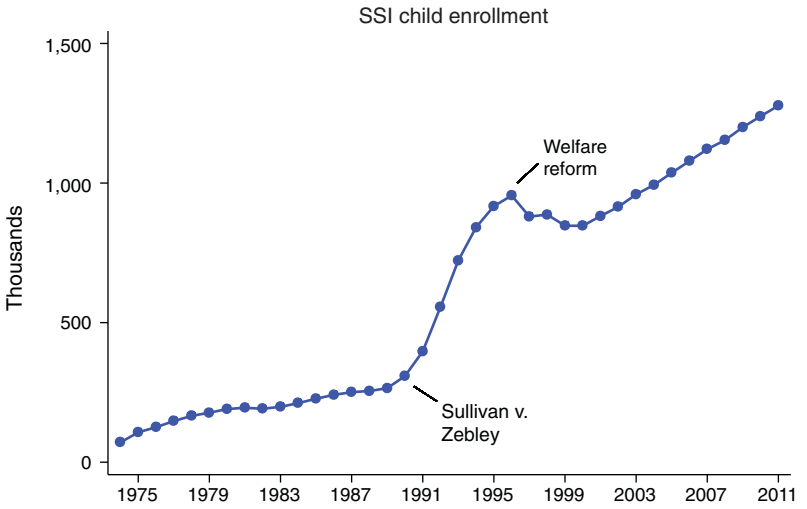

FIGURE 1. ENROLLMENT IN THE SSI CHILDREN'S PROGRAM, 1974–2011

Source: SSI Annual Statistical Reports, 2002–2011

B. *Welfare Reform Policy Change*

SSI was established by Congress in 1972 and expanded rapidly after the relaxation of adult disability criteria in 1984. In 1990, the Supreme Court decision in *Sullivan v. Zebley*[10] also relaxed medical eligibility criteria for children. As shown in Figure 1, child enrollment in SSI surged after the decision, with nearly all of the growth coming from mental conditions other than intellectual disability, including ADHD, speech delay, and autism spectrum disorders. As part of 1996 welfare reform, Congress enacted changes to the SSI children's program to limit entry and remove children believed to have been allowed improperly.

I take advantage of changes to SSI enacted as part of welfare reform to identify the effect of SSI on the long-term outcomes of youth. The Personal Responsibility and Work Opportunity Act (PRWORA) of 1996 made two changes to age 18 medical reviews, in which a disability examiner decides whether an SSI child qualifies for the program as an adult. First, it required the Social Security Administration to redetermine the eligibility of all SSI children at the age of 18, up from virtually zero age 18 medical reviews previously. Second, it increased age 18 medical review eligibility requirements to use the stricter adult standard rather than the child standard. Prior to PRWORA, SSI children who did receive age 18 medical reviews were continued on SSI as adults as long as they did not demonstrate medical improvement, whether or not they met the adult disability standard. PRWORA required all SSI children to requalify for the program as adults. Key to my empirical strategy, changes in the number and strictness of age 18 medical reviews applied only to children with an 18th birthday after August 22, 1996, which was the date of PRWORA enactment.

[10] Sullivan v. Zebley, 493 US 521 (1990).

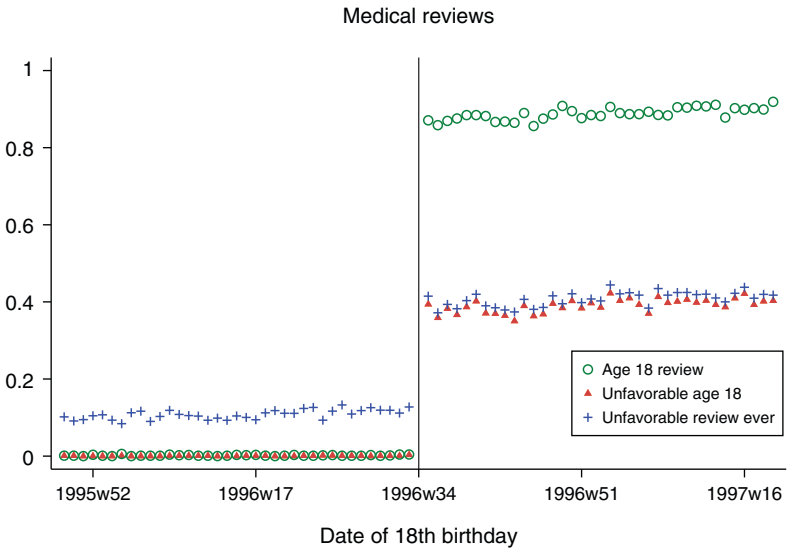

FIGURE 2. EMPIRICAL STRATEGY USING VARIATION IN ELIGIBILITY FOR MEDICAL REVIEWS

Notes: Figure plots proportion of SSI children in each birthweek bin who receive an age 18 medical review, receive an unfavorable age 18 medical review, and ever receive an unfavorable medical review (through 2013). Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

Figure 2 summarizes the empirical strategy for this RD design in date of birth. The *x*-axis shows the date of the child's 18th birthday, with a vertical line at the August 22, 1996 cutoff. The graph plots the proportion of children in each birthweek bin who receive an age 18 medical review, receive an unfavorable age 18 medical review, and ever (up to age 35) receive an unfavorable medical review. The figure confirms that the PRWORA changes were enforced: while almost no children with an 18th birthday immediately before the cutoff (hereafter, "control" group) received an age 18 medical review, nearly 90 percent of children with an 18th birthday immediately after the cutoff ("treatment" group) received one. This discontinuity in the likelihood of receiving an age 18 medical review translates into a 39 percentage point discontinuity in the likelihood of receiving an *unfavorable* age 18 medical review. Age 18 medical reviews are a specific type of the more general medical reviews used to verify continued eligibility for both adults and children. As shown in Figure 2, children with an 18th birthday after the date of PRWORA enactment are 28 percentage points more likely to ever receive an unfavorable medical review until the last time I observe them at age 35. This discontinuity is smaller than the previous ones since children on the left-hand side of the graph, who do not receive an age 18 medical review, are more likely to continue on SSI as adults and receive adult medical reviews.[11]

[11] Most of the 10 percent of children with an 18th birthday after the cutoff who did not receive an age 18 medical review had already been flagged for other violations, such as earning above SGA or failing to cooperate with the age 18 review. There is some variation in removal rates by state; the twenty-fifth percentile is 31 percent and the seventy-fifth percentile is 42 percent.

Table 1—Sample and Complier Characteristics

	Full sample			Review compliers		Off SSI compliers: Year 2		Off SSI compliers: Year 16	
	Mean	Median	Pct.	Pct.	Ratio	Pct.	Ratio	Pct.	Ratio
Demographics									
Male	0.63		63	67	1.07	68	1.09	64	1.03
Age at entry	11.9	13.7	50	55	1.11	36	0.72	−112	−2.23
Single mother	0.51		51	57	1.13	59	1.16	78	1.53
No parents	0.16		16	11	0.73	7	0.47	−19	−1.21
Diagnosis									
Mental	0.73		73	78	1.06	82	1.12	110	1.50
Intellectual	0.49		49	45	0.92	47	0.96	80	1.63
Other	0.25		25	33	1.34	35	1.41	31	1.24
Nervous	0.05		5	2	0.38	2	0.30	5	0.84
Infectious	0.04		4	3	0.87	0	0.02	−21	−5.43
Endocrine	0.04		4	6	1.63	6	1.71	10	2.79
Sensory	0.03		3	1	0.38	1	0.42	3	0.80
None	0.02		2	1	0.36	2	0.78	−6	−2.93
Pretreatment									
Child's SSI	$3,075	$2,403	50	42	0.83	40	0.81	28	0.56
Child earnings	$289	$0	49	55	1.13	49	1.00	−64	−1.32
Parent earnings	$9,592	$4,121	50	49	0.99	57	1.15	37	0.73
Family disability applications	0.16	0	37	45	1.22	48	1.28	60	1.62
Family disability income	$2,728	$0	43	49	1.12	49	1.12	55	1.27
Observations		81,800		31,870 (est.)		12,763 (est.)		3,632 (est.)	

Notes: The full sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff. Pretreatment outcomes are annual averages taken over 1980 to 1996 for family outcomes and 1990 to 1996 for child outcomes. Family disability applications/income refers to parent DI and SSI and sibling SSI. For continuous variables, "percent" is percent greater than full sample median (which can be less than 50 percent in full sample if the majority of values are zeros). Compliers calculated using the methodology in Angrist and Pischke (2008). Review compliers are youth who would receive an unfavorable age 18 medical review if in the treatment group but not if in the control group. Off SSI Year X compliers are youth who would be off of SSI in year X if in the treatment group and on SSI in year X if in the control group. Since the proportions for compliers are estimated, they can be negative when the characteristic is very rare in the complier population.

The first column of Table 1 presents sample summary statistics. The sample is majority male, which is consistent with higher disability diagnosis rate among boys, and the average age at entry is 11.9 years. Mental conditions are by far the most common diagnosis, with 49 percent of the sample having an intellectual disability and 25 percent having a mental condition other than intellectual disability. Sample members come from very low-income households, generally with fewer than two parents. Average annual parental earnings between 1980 and 1996 for those with parents are $9,600 and the median is $4,100. Median parent and sibling disability income is $0, but the average is $2,700. Half of sample members come from a household with a single mother. Another 16 percent have no parents on their record; these include children in foster care, living with other relatives, or living in institutions.

C. *Covariate Balance and Econometric Specification*

I use the discontinuity in birthdate to identify the effect of SSI removal on the long-term outcomes of SSI children. The key identifying assumptions of the RD design are that assignment to the treatment is as good as random immediately around the cutoff and the outcome variable is counterfactually smooth across the cutoff. Given the arbitrary nature of the welfare reform enactment date, there is no

TABLE 2—COVARIATE BALANCE TESTS

	Linear		Quadratic		Mean	Pct. break (linear)
	Pt. est.	SE	Pt. est.	SE		
Demographics						
Male	0.0038	(0.0066)	0.0039	(0.0098)	0.6192	0.62
Age at entry	−0.3140	(0.0609)	−0.0480	(0.0898)	12.16	−2.58
Single mother	0.0066	(0.0068)	−2.37e-05	(0.0101)	0.5054	1.30
No parents	−0.0062	(0.0049)	0.0015	(0.0072)	0.1660	−3.73
Latest record date	−87.7	(18.4)	0.9350	(27.2)	11,480	−0.76
Diagnosis						
Mental	0.0022	(0.0060)	0.0064	(0.0089)	0.7041	−0.54
None	−0.0035	(0.0020)	−0.0015	(0.0029)	0.0926	−7.37
Nervous	0.0066	(0.0031)	0.0069	(0.0045)	0.0418	12.00
Endocrine	0.0013	(0.0026)	0.00075	(0.0038)	0.0344	−1.78
Sensory	0.0064	(0.0025)	−0.0023	(0.0036)	0.0278	15.45
Infection	−0.0135	(0.0026)	−0.0118	(0.0040)	0.0189	−8.27
Musculoskeletal	0.00066	(0.0015)	0.0024	(0.0022)	0.0115	2.37
Neoplasm	0.00042	(0.0013)	0.00085	(0.0020)	0.0111	3.81
Respiratory	0.00074	(0.0014)	0.0003	(0.0022)	0.0098	5.21
Pretreatment outcomes						
Child SSI payment	152.1	(28.8)	11.4	(42.5)	$3,096	4.91
Child earnings	−34.7	(9.9)	−0.709	(13.2)	$360	−9.64
Family disability applications	−0.0055	(0.0042)	−0.0088	(0.0062)	0.1621	−3.36
Family disability income	39.7	(73.2)	−45.9	(107.6)	$2,730	1.45
Parent earnings	−574.3	(182.0)	−421.5	(268.8)	$9,650	−5.95
Observations	81,800		81,800			
Joint *F*-test	109.07		31.79			
p-value	0.0000		0.2833			

Notes: Table presents covariate balance tests for the linear and quadratic RD specification from equation (1). Latest record is the date of the most recent SSI record; a new record indicates a change to diagnosis, family structure, or some other variable. Pretreatment child SSI payment, family disability applications and receipt, and parental earnings are measured over 1980–1996; pretreatment child earnings over 1992–1996. Family disability applications/income refers to parent DI and SSI and sibling SSI. The Pct. break column gives the linear discontinuity estimate as a percentage of the control group mean. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

reason to expect a discontinuity at the August 22, 1996 cutoff. I use a parametric RD specification to test whether the instrument predicts observable covariates for children around the cutoff:

$$Y_i = \alpha + \beta Post_i + \gamma DOB_i^n + \kappa(Post_i \times DOB_i^n) + \epsilon_i, \quad (1)$$

where Y_i is a covariate for child i; $Post_i$ is a dummy for 18th birthday after the August 22, 1996 cutoff; and DOB_i^n is the date of birth running variable of polynomial order n.

As shown in Table 2, covariates are imbalanced at the cutoff under the linear specification but balanced under the quadratic specification. Based on the linear estimates, SSI children with an 18th birthday after the cutoff enter the program earlier and have lower child earnings and parental earnings prior to 1996. However, as shown in Table 2 and seen in online Appendix Figures A.1–A.3, the discontinuities are small as a percentage of the mean: 2.6 percent for age at entry, 9.6 percent for child earnings, and 6.0 percent for parent earnings. Under the quadratic specification, the point estimates of these discontinuities fall to near zero and the

F-test fails to reject the null hypothesis of covariate balance.[12] Nonparametric local linear regression estimates show discontinuities in the same variables, though the *F*-test fails to reject for smaller bandwidths because of large standard errors (online Appendix Table A.4).

Based on the covariate balance tests, I choose the parametric quadratic RD as the preferred specification but report in Table 3 estimates across polynomial orders and for nonparametric local linear regression. The sample is SSI children with an 18th birthday around the August 22, 1996 cutoff. For the parametric estimates, I use a 37-week (260 day) bandwidth on each side based on visual inspection; this sample includes 81,800 children. In online Appendix Tables A.6–A.9, I report the polynomial order selected by two goodness-of-fit tests, the Akaike information criterion and the bin selection method outlined in Lee and Lemieux (2010); for most variables, this is the linear specification. For the nonparametric estimates, I present local linear regression estimates with cross-validation bandwidth selection in online Appendix Tables A.18–A.26. As an alternative specification, I also augment the standard RD by differencing out the discontinuity at August 22 in neighboring years (1994, 1995, and 1997) from the discontinuity at August 22, 1996; these "RD-DD" results are reported in online Appendix Tables A.10–A.13.[13]

The results are highly robust to different specifications. The RD estimates for the linear and quadratic specifications are statistically indistinguishable and the same sign for every outcome except parental earnings. The nonparametric RD estimates are within 30 percent of the parametric RD estimates and are stable across bandwidths. The parametric RD-DD estimates are within 15 percent of the RD estimates. The results are also robust to the inclusion of covariates. In the style of Chetty, Looney, and Kroft (2009), I construct the empirical CDF of RD estimates for earnings and income at placebo cutoff dates in 1995, 1996, and 1997 (online Appendix Figure A.4). The true earnings RD estimate at August 22, 1996, is larger than 95.0 percent of the placebo estimates, and the true income RD estimate, which is negative, is smaller than 99.5 percent of the placebo estimates.

III. Results

A. *First-Stage Estimates for SSI Enrollment*

The causal relationship of interest is the effect of SSI removal on long-term outcomes:

$$Y_{it} = \alpha + \beta SSIStatus_{it} + X_i + \epsilon_{it}, \tag{3}$$

[12] I find that imbalances in the same covariates, of the same direction and magnitude, also exist under the linear specification at August 22 in the two neighboring years, 1995 and 1997 (online Appendix Table A.2 and online Appendix Figures A.1–A.3), and that these imbalances disappear under a quadratic specification (online Appendix Table A.3). These results suggest that there is nothing unusual about the August 22, 1996 date.

[13] The RD-DD specification is

$$\begin{aligned} Y_i = {} & \alpha_0 + \beta_0(Coh96_i \times Post_i) + \gamma_0(Coh96_i \times DOB_i^n) + \kappa_0(Coh96_i \times Post_i \times DOB_i^n) \\ & + \alpha_1 Coh96_i + \beta_1 Post_i + \gamma_1 DOB_i^n + \kappa_1(Post_i \times DOB_i^n) + X_i + \epsilon_i. \end{aligned} \tag{2}$$

Online Appendix Table A.5 shows the covariate balance tests for the RD-DD design under both a linear and quadratic specification.

TABLE 3—FIRST-STAGE AND REDUCED-FORM ESTIMATES

	Linear		Quadratic		Cubic		Quartic		LLR		Control mean
	Pt. est.	SE	Pt. est.	SE	Pt. est.	SE	Pt. est.	SE	Pt. est.	SE	
First stage ($N = 81{,}800$)											
Age 18 review	0.864	(0.0032)	0.866	(0.0048)	0.865	(0.0064)	0.867	(0.0081)	0.865	(0.0034)	0.0017
Unfavorable age 18	0.375	(0.0045)	0.377	(0.0068)	0.387	(0.0090)	0.394	(0.0113)	0.375	(0.0048)	0.0007
SSI enrollment	−0.099	(0.0049)	−0.104	(0.0072)	−0.104	(0.0096)	−0.106	(0.0119)	−0.103	(0.0059)	0.5891
Own income ($N = 81{,}800$)											
SSI income	−786	(40.5)	−818	(59.6)	−862	(78.9)	−889	(98.1)	−819	(49.0)	$4,055
Avg. earnings	377	(102)	311	(155)	318	(207)	152	(260)	355	(127)	$4,222
Earnings > $0	0.0281	(0.0046)	0.0272	(0.0069)	0.0327	(0.0091)	0.0363	(0.0114)	0.0279	(0.0056)	0.4056
Earnings > $15K	0.0116	(0.0029)	0.0124	(0.0043)	0.0134	(0.0058)	0.0074	(0.0073)	0.0128	(0.0036)	0.1026
DI applications	−0.0489	(0.0117)	−0.0727	(0.0174)	−0.0396	(0.0235)	−0.0305	(0.0296)	−0.0524	(0.0200)	0.375
DI income	−27.3	(24.3)	−57.2	(36.2)	−28.3	(48.7)	17.7	(61.3)	−40.1	(33.3)	$688
Total obs. income	−464	(98.6)	−592	(149)	−599	(200)	−749	(250)	−542	(123)	$9,041
Income SD	154	(60.4)	91.7	(88.8)	61.7	(120)	−55.4	(151)	123	(73.0)	$4,155
Income coeff. of var.	0.115	(0.0103)	0.124	(0.0152)	0.122	(0.0200)	0.125	(0.0249)	0.115	(0.0132)	0.6823
Arc percent change income	0.0511	(0.00389)	0.0539	(0.0058)	0.0542	(0.0077)	0.0600	(0.0096)	0.0513	(0.0050)	32
Household income ($N = 72{,}274$)											
Parental earnings	−97.7	(177)	181	(260)	55.6	(344)	296	(426)	110	(232)	$11,974
Family disability applications	−0.0032	(0.0021)	−0.0057	(0.0031)	−0.0020	(0.0041)	−0.0061	(0.0051)	−0.0036	(0.0028)	0.089
Family disability income	−63.6	(92.2)	−63.0	(136)	−70.0	(181)	−228	(228)	−45.2	(109)	$4,812
Total HH income	−660	(213)	−441	(314)	−499	(416)	−676	(517)	−555	(246)	$25,917
HH income SD	−117	(84)	−173	(123)	−282	(167)	−521	(209)	−136	(88.2)	$8,908
HH income coeff of var	0.0182	(0.0057)	0.0215	(0.0083)	0.0116	(0.0108)	0.0040	(0.0133)	0.0192	(0.0060)	0.4503
Arc percent Δ HH income	0.0153	(0.0029)	0.0166	(0.0043)	0.0108	(0.0056)	0.0143	(0.0070)	0.0158	(0.0030)	26
Sibling outcomes ($N = 21{,}676$)											
Avg. earnings	−315	(171)	−576	(254)	−439	(336)	−594	(420)	−450	(185)	$3,817
Earnings > $10K	−0.0118	(0.0065)	−0.0268	(0.0093)	−0.0264	(0.0121)	−0.0298	(0.0148)	−0.0191	(0.0069)	0.1430

Notes: Table presents parametric RD and nonparametric local linear regression (LLR) estimates for first-stage and reduced-form outcomes. LLR bandwidths for each outcome chosen using cross-validation methods; LLR estimates across bandwidths presented in online Appendix Tables A.18–A.26. All estimates pool outcomes across the 16 years from 1997 to 2012. Total observed income equals earnings plus SSI plus DI. Family disability applications/income sums parent SSI and DI and sibling SSI; total household income equals own earnings, own SSI and DI, parent earnings, and parent SSI and DI. Own sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff. Sibling sample is younger siblings of youth sample who are themselves on SSI.

where Y_{it} is the outcome of interest for individual i in year t and $SSIStatus_{it}$ is a measure of SSI status in year t, the endogenous variable of interest. Based on the empirical strategy outlined in the previous section, I use having an 18th birthday after the

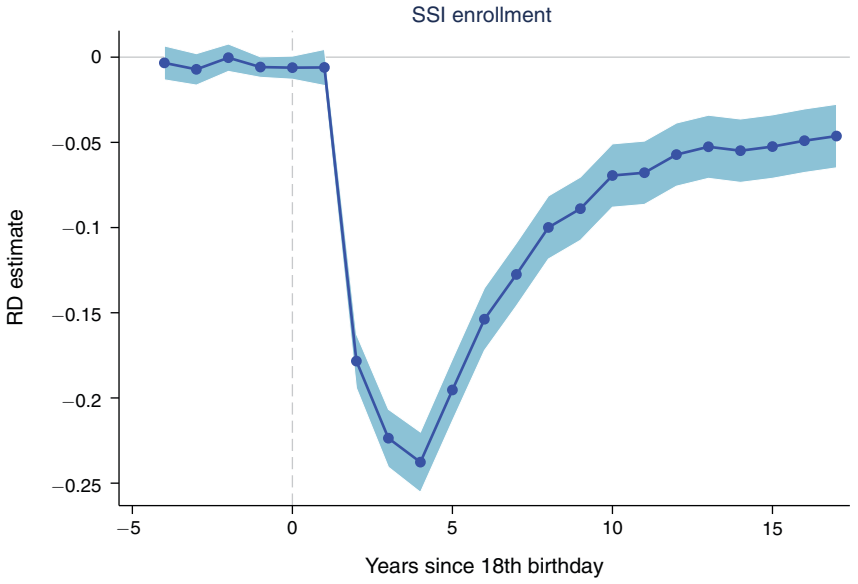

FIGURE 3. CHANGE IN FIRST STAGE FOR SSI ENROLLMENT OVER TIME

Notes: Figure plots parametric RD estimates of the effect of a child having an 18th birthday after the August 22, 1996 cutoff, using a polynomial order of 2 with covariates. Shaded region is 95 percent confidence interval. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

August 22, 1996 cutoff as an instrument for SSI status. The first-stage equation is equation (1) with covariates and the endogenous variable on the left-hand side:

$$(4) \quad SSIStatus_i = \alpha_0 + \beta_0 Post_i + \gamma_0 DOB_i^n + \kappa_0 (Post_i \times DOB_i^n) + X_i + \epsilon_i.$$

The covariates in $\mathbf{X}_i$ include sex, diagnosis category, age at entry, parental earnings prior to 1997, and state. Recall from Figure 2 the first-stage effect on age 18 removal: having an 18th birthday after the cutoff increases the likelihood of receiving an unfavorable age 18 review by 39 percentage points. Figure 3 plots the RD estimate for SSI enrollment estimated separately for each year using equation (4); the first-stage graph for event year 4 is given as an example in online Appendix Figure A.5. As expected from quasi-random assignment, there is no difference between the control and treatment groups in the probability of SSI enrollment prior to age 18. The difference between the control and treatment groups does not open up until two years after the year of the child's 18th birthday as a result of lags in decision time.[14] The first stage reaches 24 percentage points four years after age 18 and then attenuates rapidly until it plateaus at 5 percentage points.

I find that most of the attenuation is attributable to control group members leaving the program in large numbers as adults, with 47 percent not enrolled in either SSI or DI by 2013 (see online Appendix Figure A.6). The most common reasons

[14] The median decision time from the child's 18th birthday is roughly three-quarters of a year overall, but it increases to 1.4 years for the 22 percent of cases that made it to the first appeals stage (reconsideration) and 2.4 years for the 10 percent of cases that made it to the second appeals stage (administrative law judge).

for control group exit are adult medical review (15 percent of all control group members), income and asset violations (13 percent, though a large fraction of these still qualify for DI), incarceration (7 percent), and death (5 percent). Adult medical reviews are less strict than age 18 medical reviews because disability examiners must demonstrate that the recipient has medically improved since the last decision; most adults are due to receive a medical review every three years, but in practice the execution of reviews varies based on funding. SSA removed more adults than usual via adult medical reviews in the post-welfare reform era because Congress had fully funded its review budget. For this reason, removal via age 18 medical review had less impact on future SSI status in the post-PRWORA era than it would have had today or at other times. Rupp and Riley (2011) follow the 2000 adult SSI entry cohort over the five years after entry; after 5 years, 67 percent of the 2000 SSI entry cohort is still enrolled in either SSI or DI, 10 percent are no longer eligible for medical or nonmedical reasons, 17 percent have died, and 6 percent have reached retirement age. As a comparison, I find that 66 percent of the SSI youth control group is still on SSI after five years, but unlike the Rupp and Riley (2011) context, the vast majority of the attrition in my context is due to eligibility changes rather than to death.

Control group exit is the reason that the first-stage magnitude peaks at 24 percentage points rather than the 39 percentage points predicted by the unfavorable age 18 review estimates. The proportion of treatment group members returning after removal is smaller: 15 percent return to SSI by 2013, and 20 percent return to either SSI or DI by 2013.

The attenuation of the first stage does not affect the internal validity of the IV estimates in a given year, but it does affect the interpretation of the IV estimates using age 18 removal as the endogenous variable. The effect of age 18 removal depends on the likelihood of leaving or re-entering the program in the future, which varies based on current SSA funding for reviews. Control group members who leave SSI in adulthood experience the reversal of the program's income and substitution effects, which causes their earnings to increase after they exit. Therefore comparisons of the control and treatment groups several years after 1996 will understate the earnings difference between those who are on versus off of SSI. I report results in this section using age 18 removal as the endogenous variable; in Section IV, I interpret the results using contemporaneous SSI enrollment as the endogenous variable.

B. *Estimating Effects of Removal on Own Earnings and Income*

Figure 4 presents the reduced-form graph for annual earnings in adulthood. Table 3 presents parametric RD estimates for several polynomial orders as well as nonparametric local linear regression estimates, pooling the 16 years after removal. SSI youth who have an 18th birthday after August 22, 1996, earn on average $310 more per year than those who have an 18th birthday before the cutoff. The estimate is significant at the 5 percent level.

For a more meaningful interpretation, Figure 5 presents year-by-year IV estimates for the SSI income loss in each year juxtaposed with the average earnings response in each year, using age 18 removal as the endogenous variable; the first set of columns in Table 4 presents IV estimates pooling the 16 years following removal.

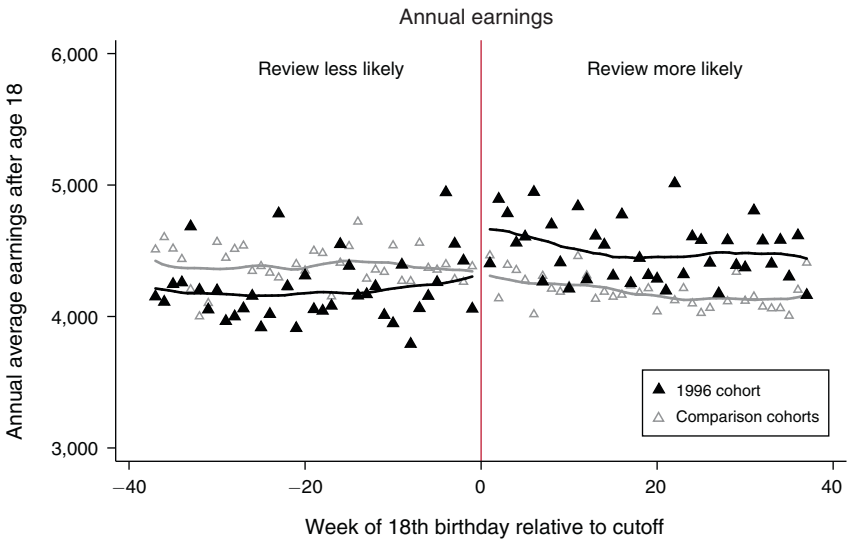

FIGURE 4. REDUCED-FORM EFFECT ON ANNUAL EARNINGS

Notes: Figure plots average annual earnings after age 18. Solid markers indicate the 1996 cohort, while hollow gray markers represent comparison cohorts (1994, 1995, and 1997). Sample is SSI children with an 18th birthday within 37 weeks of the August 22 cutoff in 1996 and in 1994, 1995, and 1997.

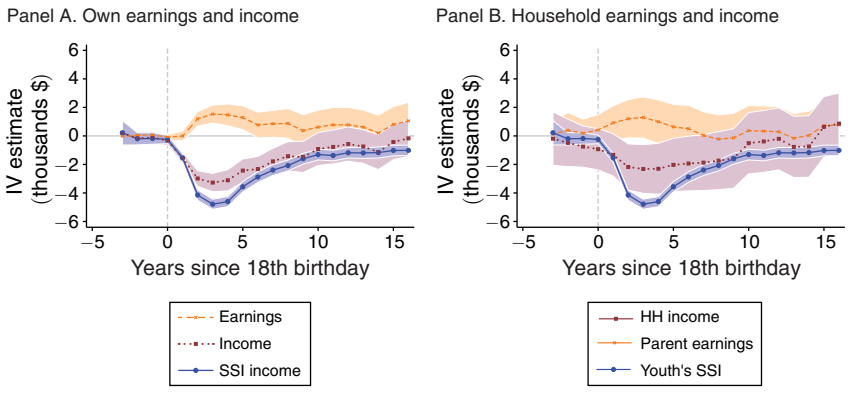

FIGURE 5. IV ESTIMATES OF THE EFFECT OF AGE 18 REMOVAL

Notes: Figure plots parametric IV RD estimates of the effect of age 18 removal on annual SSI income, earnings, and total income, using a polynomial order of 2 with covariates. Shaded region is 95 percent confidence interval. Sample is SSI children with 18th birthday within 37 weeks of August 22, 1996 cutoff.

SSI youth who are removed via age 18 medical review increase their earnings by an average of $830 each year, replacing approximately one-third of the $2,170 annual loss in SSI cash benefits.[15] This earnings response represents a 20 percent increase over the control group mean of $4,200. Those who are removed increase their earnings by $9,890 in present discounted value over the 16 years following removal.

[15] I do not observe effects on Medicaid enrollment, but I present back-of-the-envelope calculations in the online Appendix.

TABLE 4—IV ESTIMATES

	Age 18 removal		Off SSI		Control mean
	Pt. est.	SE	Pt. est.	SE	
Own income ($N = 81,800$)					
SSI income	−2,167	(150)	−7,886	(276)	$4,055
Average earnings	825	(408)	3,001	(1,421)	$4,222
Earnings > $0	0.0722	(0.0179)	0.263	(0.0603)	0.4056
Earnings > $15K	0.0328	(0.0115)	0.119	(0.0395)	0.1026
Earnings PDV	9,889	(4,557)	35,982	(15,806)	$48,174
DI applications	−0.193	(0.0466)	−0.701	(0.182)	0.375
DI income	−152	(95.7)	−551	(350)	$688
Total observations income	−1,569	(397)	−5,709	(1,515)	$9,041
Income > $0	−0.0916	(0.0137)	−0.333	(0.0426)	0.8349
Income > $15K	0.0023	(0.0128)	0.0083	(0.0464)	0.1416
Income PDV	−21,006	(4,434)	−76,432	(17,175)	$107,525
Own income variability ($N = 81,800$)					
Income SD	243	(234)	884	(834)	$4,155
Log income SD	0.485	(0.0863)	1.764	(0.278)	1.6258
Income coefficient of variable	0.328	(0.0396)	1.193	(0.125)	0.6823
Income CV (detrend)	0.411	(0.0322)	1.496	(0.122)	0.4578
Income CV (bounded)	0.358	(0.0277)	1.302	(0.107)	0.4306
Arc percent change income	0.143	(0.0147)	0.520	(0.0479)	32
Household income ($N = 72,274$)					
Parental earnings	474	(679)	1,673	(2,397)	$11,974
Family disability applications	−0.0148	(0.0080)	−0.0522	(0.0285)	0.089
Family disability income	−164	(354)	−579	(1,247)	$4,812
Total HH income	−1,150	(818)	−4,055	(2,907)	$25,917
HH income > $0	−0.0144	(0.0071)	−0.0508	(0.0243)	0.9567
HH income > $15K	−0.0316	(0.0183)	−0.111	(0.0646)	0.6535
HH income PDV	−16,395	(9,572)	−57,829	(34,114)	$314,240
HH income SD	−450	(322)	−1,589	(1,160)	$8,908
log HH income SD	0.113	(0.0675)	0.397	(0.232)	0.8754
HH income coefficient of variable	0.0561	(0.0216)	0.198	(0.0736)	0.4503
Arc % Δ HH income	0.0432	(0.0110)	0.152	(0.0368)	26

Notes: Table presents parametric RD IV estimates using a polynomial order of 2 with covariates, using either age 18 removal or off SSI as endogenous variable. Percent decrease for off SSI estimates may exceed 100 percent because some control group members leave SSI after the age of 18; see online Appendix Table A.27 for comparison with control group members who stay on SSI. Total observed income equals earnings plus SSI plus DI. Earnings/income PDV is present discounted value over 16 years following removal. Family disability applications/receipt sums parent SSI and DI and sibling SSI; total household income equals youth earnings, youth SSI and DI, parent earnings, and parent SSI and DI. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

Age 18 removal increases the likelihood of having positive earnings by 7.2 percentage points and the likelihood of earning above $15,000—approximately the full-time, full-year minimum wage level—by 3.3 percentage points.

Removal may also affect whether SSI youth apply for and receive Social Security Disability Insurance (DI) benefits. DI has the same medical requirements as SSI but requires a work history and pays a benefit amount based on past earnings. Since SSI removal increases earnings, and DI work history requirements are low for young workers, removed SSI youth may be more likely to have the work history to qualify for DI.[16] On the other hand, removal from SSI may discourage removed youth from

[16] Workers under the age of 24 qualify with 1.5 years of work. Workers between 24 and 31 qualify with a work history of half the time between age 21 and the onset of disability.

applying for DI. I find that the latter effect dominates: age 18 removal reduces DI applications by one-half over the following 16 years. DI income falls by $150 annually, though this estimate is not statistically significant.

I aggregate all observable measures of income—earnings, SSI income, and DI income—and find that SSI youth lose on average $1,570 per year in total observed income as a result of the SSI loss. The observed income loss totals $21,000 in present discounted value over the 16 years following removal, a fall of 19 percent relative to the control group. Of course, there are several potential sources of income that I do not observe, including transfers from family members, non-disability public assistance, and unreported earnings. In Section V, I use survey and administrative data to consider each of these unobserved income sources.[17]

The mean earnings response masks heterogeneity across subgroups. As shown in Table 5, the youth's earnings response is monotonically increasing in parental earnings. Youth with intellectual and other mental conditions have a larger earnings response than those with physical disabilities. In contrast, effects by years on SSI and local economic conditions are non-monotonic, and there is no statistically significant difference by gender. I also estimate quantile RD IV treatment effects for earnings using the estimator proposed by Frandsen, Frölich, and Melly (2012).[18] Note that quantile estimation does not measure changes for particular *individuals* in the earnings and income distribution, but rather for particular *percentiles* of that distribution. Figure 6 shows that while there is no increase in earnings at the lowest decile, the earnings response at the highest two deciles nearly reaches the magnitude of the SSI cash income loss.

I also study the effects of removal on income volatility, which has welfare implications if individuals are risk averse and intertemporal consumption smoothing is costly. I use several measures of volatility. The standard deviation of income, constructed from annual income between ages 20 and 34, captures the absolute change in income volatility without adjusting for the drop in income levels caused by age 18 removal. The estimate is positive and marginally significant for the linear parametric and nonparametric estimates, but is not significant for other specifications. However, I estimate large increases in volatility using measures that adjust for the change in income level; these measures reflect a model in which, for example, someone with an average income of $10,000 is more affected by $5,000 income swings than is someone with an average income of $100,000. Age 18 removal increases the standard deviation of log income (after converting observed incomes of $0 to $1) by a statistically significant 0.485 (30 percent increase) that is robust across specifications. Similarly, the coefficient of variation of income, which is the standard deviation divided by the mean, increases from 0.682 to 1.010, a statistically significant increase of 48 percent.[19] The average annual (absolute value) arc percentage change in income increases by 14 percentage points after removal. As with income levels,

[17] I estimate mortality effects but the results are imprecise.

[18] I implement this estimator using Melly's (2014) "rddqte" Stata command.

[19] Using de-trended income to allow for earnings growth produces nearly identical results, likely because most SSI youth have no earnings growth. In addition, the jump in the coefficient of variation of income is robust to excluding individuals with very low earnings—and thus potentially a very high coefficient of variation—by either imposing a lower bound on the denominator (average annual income) or using quantile regression evaluated at the median. These results are given in Table 4.

Table 5—Earnings IV Estimates by Subgroup

	SSI income		Earnings	
	Pt. est.	SE	Pt. est.	SE
Parent earnings quintile				
1	−$2,225	($406)	−$1,151	($935)
2	−$2,161	($309)	−$437	($792)
3	−$2,353	($288)	$980	($796)
4	−$1,791	($312)	$2,097	($935)
5	−$2,167	($357)	$2,136	($1,099)
Family structure				
Single or no parents	−$2,192	($179)	$736	($486)
Two parents	−$2,140	($271)	$1,019	($745)
Gender				
Female	−$2,876	($278)	$975	($558)
Male	−$1,805	($175)	$778	($545)
Diagnosis				
Physical	−$2,472	($362)	$27	($1,144)
Other mental	−$1,864	($215)	$1,493	($695)
Intellectual	−$2,402	($220)	$1,064	($498)
Years on SSI				
1–3 years	−$2,323	($258)	$402	($773)
4–5 years	−$1,957	($185)	$1,068	($558)
6–9 years	−$2,299	($384)	$245	($1,011)
10–13 years	−$2,972	($814)	$1,766	($1,811)
14–18 years	−$2,535	($1,926)	$2,026	($3,757)
County unemployment rate quintile				
1	−$1,998	($358)	$173	($1,012)
2	−$1,758	($342)	$662	($876)
3	−$2,414	($319)	$535	($886)
4	−$2,482	($376)	$1,715	($914)
5	−$2,043	($323)	$1,090	($896)

Notes: Table presents parametric RD IV estimates by subgroup for SSI income and earnings using a polynomial order of 2, using age 18 removal as the endogenous variable. Earnings are averaged over the 16 year period following SSI removal. County unemployment rate is the 1997 unemployment rate. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

the income volatility analysis is limited by unobserved income sources; for example, family transfers or other public benefits may mitigate the increase in income volatility. On the other hand, the loss of Medicaid and food stamps as a result of SSI removal, or losses in eligibility for other programs as a result of higher earnings, may reduce the income stabilization provided by these programs.

C. *Estimating Effects of Removal on Household Income*

SSI removal may also affect the earnings and income of parents, siblings, and other family members of the removed SSI youth, especially if the youth is still financially connected to the household after the age of 18. The survey data reviewed in Section V indicate that around half of SSI children continue to live with parents in their early 20s. Figure 5 presents the parental earnings response over time;

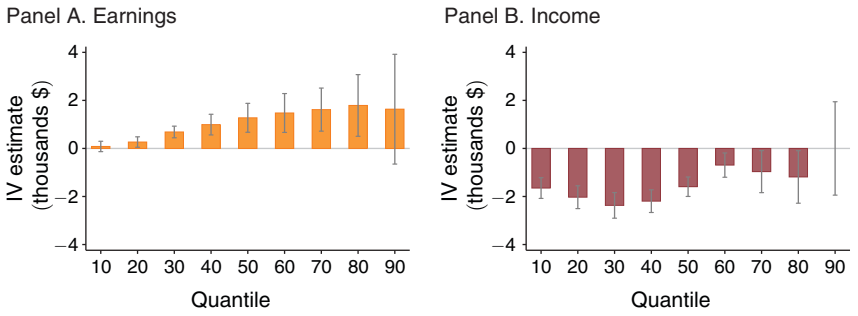

FIGURE 6. QUANTILE IV ESTIMATES FOR EARNINGS AND TOTAL OBSERVED INCOME

Notes: Graphs plot quantile IV RD estimates of the effect of being off of SSI on earnings and total observed income (= earnings + SSI + SSDI), using the estimator in Frandsen, Frölich, and Melly (2012) and Melly's (2014) "rddqte" Stata command. Error bars are 95 percent confidence interval. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

there appears to be a slight increase in parental earnings in the years following age 18 removal, but the increase is not statistically significant. The estimates for parental earnings and parental DI and SSI in Tables 3 and 4 are small and statistically insignificant. Siblings are less likely to apply for SSI but no less likely to receive SSI, which is consistent with the findings of Deshpande (2016). I aggregate all observed sources of household income into one measure of total household income, including the 18-year-old's SSI, DI, and earnings; parents' SSI, DI, and earnings; and younger siblings' SSI.[20] Households of youth who are removed via age 18 review lose $1,150 in total observed income annually and $16,400 in present discounted value over the 16 years following removal, though these estimates are imprecise.

As with the 18-year-old's income, absolute measures of household income volatility, such as the standard deviation of household income, yield no statistically significant effects. However, relative measures of volatility increase: the standard deviation of log household income increases by 13 percent, and the coefficient of variation of household income increases by 12 percent. These increases are smaller than those for youth income because parent and sibling income streams help to stabilize the household's income.

Turning to sibling outcomes, I observe in SSA data the adult earnings of siblings of removed SSI youth *who are themselves enrolled in SSI at some time*, though not of siblings more generally. I limit the sample to younger siblings of the 18-year-olds, since they are most likely to be living at home when the 18-year-old is removed.[21]

[20] I do not observe older siblings' SSI unless they applied as a child, since only SSI recipients under 18 have a parental SSN on their record. I also exclude sibling earnings since I observe earnings only for those siblings who are themselves on SSI.

[21] The number of younger siblings on SSI is 22,070 from the original sample of 81,800 18-year-olds. Eighty percent of 18-year-olds in the sample have no younger siblings on SSI, 15 percent have one younger sibling on SSI and 5 percent have more than one younger sibling on SSI. I cluster standard errors at the household level to adjust for multiple younger siblings on the program.

From Table 3, I find that younger siblings of 18-year-olds with an 18th birthday after the cutoff have average annual adult earnings $580 lower than younger siblings of 18-year-olds with an 18th birthday before the cutoff; they are 2.5 percentage points less likely to have positive earnings and 2.7 percentage points less likely to earn more than $10,000 (full results in online Appendix Table A.9). These estimates are statistically significant. The results suggest that the 18-year-old's review has adverse impacts on younger siblings who are also on SSI, but the channels through which this effect operates are unclear. I find no discontinuity in younger sibling adult SSI enrollment, meaning that the effects do not operate through the younger sibling's own SSI status. The most obvious channel is the drop in household income from the loss of the 18-year-old's SSI income. However, for younger siblings who are on SSI, witnessing the age 18 review process may cause them to update expectations about the likelihood of their own removal from SSI and change their behavior. Since the appropriate endogenous variable in this context is unclear, I report only reduced-form estimates for sibling adult outcomes.

Finally, turning to intergenerational outcomes, I estimate the effect of SSI removal on the likelihood that the 18-year-old has a child who is enrolled in SSI. Intergenerational *correlation* is high: 18 percent of women and 4 percent of men in the original 18-year-old sample have a child on SSI, not conditional on having a child (see online Appendix Figure A.7). However, there is no discontinuity at the cutoff, which indicates no *causal* effect of SSI removal on intergenerational SSI receipt. This finding contrasts with Dahl et al. (2014), who find in the Norwegian disability insurance setting that the allowance of a parent increases his or her adult child's disability participation by 12 percentage points after 10 years. The most likely explanation for the contrast is that in my setting all 18-year-olds in the sample were on SSI as children and are likely knowledgeable about the SSI children's program through that experience. Whether they continue on SSI as adults does not appear to affect the probability that their children enroll in SSI.

IV. Interpretation

A. *Estimating Effects of SSI Enrollment*

In the second set of columns in Table 4, I present IV estimates using contemporaneous SSI enrollment as the endogenous variable, with the goal of providing more policy-relevant estimates. The left-hand side of Figure 7 presents earnings levels for SSI youth who are off SSI in each year by adding the earnings of control group members on SSI to the earnings IV estimate for being off SSI in each year. On average, SSI youth who are removed and stay off SSI earn $3,000 more annually than those who are on SSI, bringing the earnings levels of removed SSI youth to $4,400 per year. As a result, SSI youth who are removed and stay off SSI lose $76,000 in present discounted observed income over the 16 years following removal.

Figure 7 shows a strikingly flat earnings trajectory over time. The drop in earnings at age 32, which corresponds to 2008, reflects the effects of the Great Recession. The flat earnings trajectory suggests that most SSI youth who are removed do not gain substantial labor market experience or skills over time. However, the $15,000 earnings threshold, on the right-hand side of Figure 7, exhibits an upward trend over

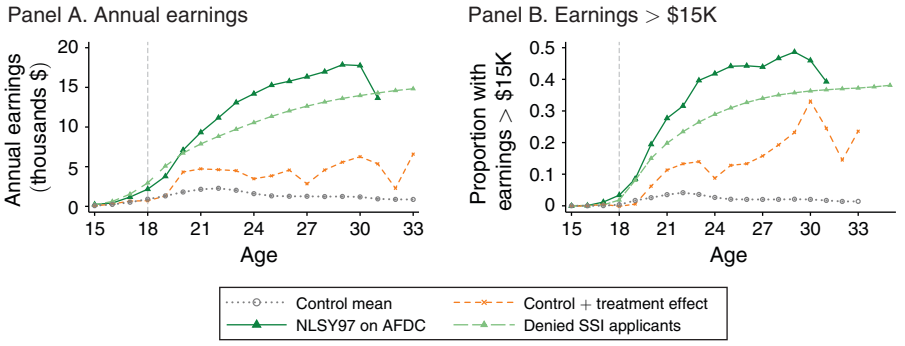

FIGURE 7. EARNINGS OF REMOVED SSI YOUTH VERSUS BROADER DISADVANTAGED POPULATION

Notes: Series with hollow circles is earnings for control group members who are on SSI in that year. Series with Xs is control mean plus the IV treatment effect of being off SSI in that year. Series with dark triangles graphs earnings of NLSY–1997 youth enrolled in AFDC during their childhood. Series with light triangles graphs earnings of SSI child applicants who were born before 1990, denied from SSI at least once as children, and never spent time on SSI.

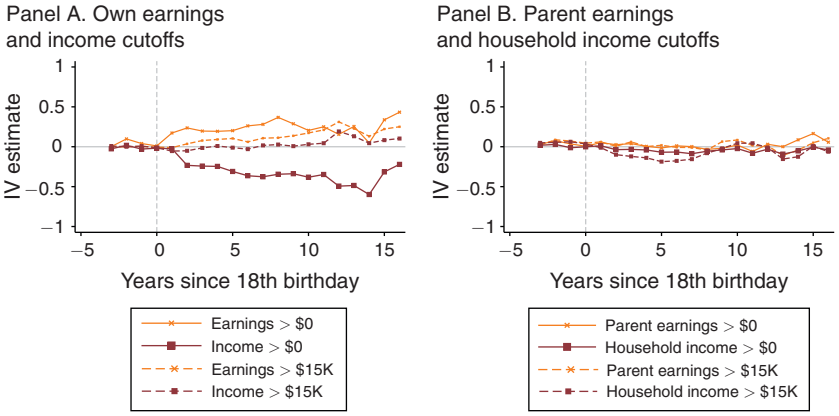

FIGURE 8. IV ESTIMATES OF THE EFFECT OF BEING OFF SSI ON EARNINGS AND INCOME THRESHOLDS

Notes: Figure plots parametric IV RD estimates of the effect of being off SSI on earnings and income thresholds in each year, using a polynomial order of two with covariates. Sample is SSI children with an 18th birthday within 37 weeks of the August 22, 1996 cutoff.

time, suggesting returns to labor market participation for a fraction of SSI youth.[22] Figure 8 presents earnings and income thresholds over time for both the SSI youth and the household using contemporaneous SSI enrollment. The likelihood of youth earnings above $0 and $15,000 increases over time, while the likelihood of positive (observed) youth income is negative and decreasing over time. Effects on parental earnings and household income are much smaller.

[22] As another approach to measuring long-term effects, I estimate the effect of cumulative years off of SSI on earnings, with results shown in online Appendix Figure A.8. The effect is constant over time, with one additional year off of SSI increasing cumulative earnings by about $2,200 per year. This parameterization of the earnings response suggests limited long-term effects on average, consistent with the mean earnings graph in Figure 7.

The first-stage attenuation means that the year-by-year IV estimates using contemporaneous SSI enrollment are identified off of a different "complier" population in each year. In the online Appendix, I describe how the complier population changes over time and reweight the IV estimates to adjust for those changes. I find that the reweighted estimates are similar to but somewhat larger than the unweighted estimates (online Appendix Figure A.9).

B. *Comparing Removed SSI Youth to Other Disadvantaged Youth*

To put the earnings of removed SSI youth in context, I compare the earnings of removed SSI youth to the earnings of youth who come from similar low-income households but do not have disabilities. SSI youth come from very disadvantaged households—median reported parental earnings are just $8,000 in the year of the child's 18th birthday—and it could be that nondisabled youth of the same socioeconomic status perform just as poorly in the labor market. In Figure 7, I compare the labor market outcomes of removed SSI youth to the outcomes of two "disadvantaged but nondisabled" comparison groups. The first comparison group is youth from the National Longitudinal Survey of Youth-1997 (NLSY97) whose families were enrolled in the Aid to Families with Dependent Children (AFDC) program, a means-tested cash welfare program, during their childhood.[23] The second comparison group is denied child SSI applicants from SSA administrative data, since families that apply for SSI are likely to be disadvantaged but the child was deemed too healthy to qualify for SSI. Relative to removed SSI youth, the comparison groups have more robust earnings growth over time. By age 30, mean earnings are $17,800 for the NLSY97-AFDC group and $14,000 for the denied SSI applicant group, compared to just $6,300 for removed SSI youth. The gap is less stark at the upper end of the earnings distribution. The proportion of youth earning above $15,000 by age 30 is 46 percent for the NLSY97-AFDC group and 36 percent for the denied SSI applicant group; it is 33 percent for removed SSI youth. These comparisons suggest that while a minority of removed SSI youth perform reasonably well in the labor market relative to their nondisabled counterparts, the majority of removed SSI youth fall behind.

I also compare the income volatility of removed SSI youth to that of other disadvantaged youth. The increase in income volatility is the result of switching from stable SSI benefits as the primary source of income to volatile earnings as the primary source of income. (The coefficient of variation of *earnings* does not change, suggesting that less stable earnings are not the cause of the increase in volatility.) I use the Continuous Work History Sample, which contains annual earnings from administrative tax data for 1 percent of the US population, to compare earnings volatility by earnings level in the general population. Restricting to individuals in the CWHS of the same age as the SSI youth in my sample, I find that the individuals in the bottom quintile of average earnings have a coefficient of variation of earnings of 1.845 on average, which is almost identical to the 1.846 average coefficient of variation of income for removed SSI youth. In contrast, the coefficient of variation

[23] I get comparable results using other proxies for disadvantaged households, such as food stamp receipt, any welfare receipt, and low parental education and income.

of earnings is 0.704 for the middle quintile and 0.561 for the highest quintile. Using the Detailed Earnings Record, which gives one record per employer per worker per year, I find that about half of earnings volatility for removed SSI youth is attributable to job turnover and the other half to within-job earnings fluctuations.[24]

C. *Comparing 1996 SSI Youth Cohort to Recent Cohorts*

Would the findings of this paper apply to SSI youth who are removed today? As shown in Figure 1, SSI child enrollment has expanded rapidly since 1996, with nearly all of this expansion coming from mental and behavioral conditions other than intellectual disability. If this composition shift means that today's SSI youth have less severe conditions, then their earnings potential at 18 could be higher than that of the 1996 cohort. On the other hand, since child medical reviews (before age 18) are more common today than they were before PRWORA, SSI children who stay on SSI until age 18 today may have more severe conditions than those who reached 18 in 1996. The families of today's SSI children may also be more likely to anticipate age 18 removal and adjust human capital decisions in response, though the direction of this adjustment is ambiguous.[25]

To assess the generalizability of the findings in this paper to recent SSI cohorts, I would need to compare the characteristics of SSI youth in each age cohort *who are at risk of being removed from SSI*. I cannot isolate this ideal "marginal" population because I do not have an instrument for SSI removal after 1996. However, the population of SSI youth who are removed provide a reasonable approximation to the ideal population: they are removed when they receive an age 18 medical review, and by law they could not have been removed for medical reasons (at age 18) if they had not received an age 18 medical review.[26]

In Figure 9, I compare the characteristics of SSI youth who are removed at age 18 (in solid lines) over time, as well as the characteristics of the full SSI youth population over time (in dashed lines). As expected, the proportion of removed SSI youth with intellectual disability declines by half between 1996 and 2011, with other mental and behavioral conditions making up the difference. The proportion of SSI children in each severity category remains stable over time, likely because these categories are coarse and the lowest severity ranking is used infrequently. Household structure does not change substantially over this period. However, real parental earnings (averaged across the 18 years of childhood) increase by 30 percent, a trend that is inconsistent with the hypothesis that SSI has moved toward serving less-disabled but lower-income children over time.

[24] Descriptively, SSI youth who are removed from the program hold on average 1.3 jobs per year. Year-to-year job turnover is high: in the average year, they experience the addition of 0.83 jobs and the loss of 0.81 jobs relative to the previous year.

[25] For example, families may decrease human capital investment if they perceive removal likelihood to be increasing in human capital.

[26] Of course, they are not the ideal population itself because (i) a small fraction of 18-year-olds (less than 10 percent) are removed for nonmedical reasons and (ii) youth who remain on SSI at age 18 can be removed later in life.

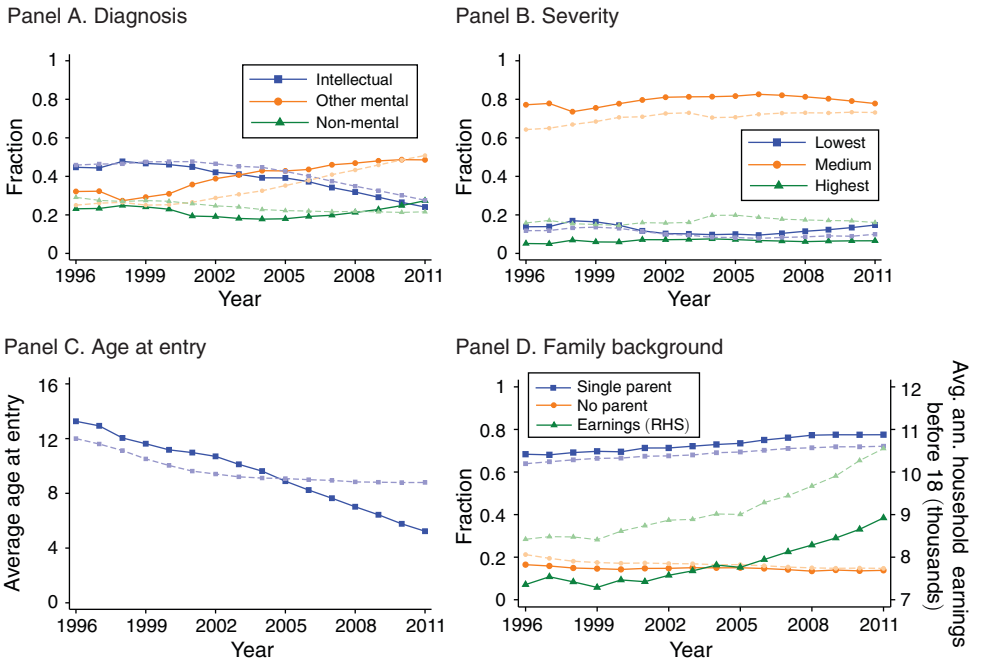

FIGURE 9. CHARACTERISTICS OF REMOVED SSI YOUTH (*Solid*) AND ALL SSI YOUTH (*Dashed*)

Notes: Figure plots the average characteristics of SSI youth who turn 18 in each year from 1996 to 2011. Solid lines represent SSI youth who are removed at age 18 in each age cohort, while dashed lines represent all SSI youth in an age cohort. Parental earnings are averaged over the years that the child is between 0 and 18 years old.

The most striking change is a decline in the age of entry over time, which falls from 13 years in 1996 to 5 years in 2011.[27] The main reason for this decline is the surge in enrollment after the *Sullivan v. Zebley* decision in 1990. Most of the youth turning 18 in 1996 entered the program after 1990, when they would have been 12, while youth turning 18 in later years entered at earlier ages.

Clearly, there have been changes in the observable characteristics of removed SSI youth over time, with youth entering at younger ages and more likely to be diagnosed with a mental condition other than intellectual disability. From Table 5, youth with intellectual and other mental conditions have comparable earnings responses, and the earnings response is non-monotonic in age at entry. This suggests that the earnings response of more recent removed SSI youth would be substantially different from the estimates in this paper only if there have been changes in unobservable characteristics *within* observable subgroups, an assumption that I am unable to test.

V. Welfare Implications

The results show that SSI removal causes a large drop in total observed income and an increase in income volatility. The relevant questions for a normative assessment

[27] Number of years on SSI is nearly co-linear with age at entry, increasing from 4.5 years in 1996 to 12.0 years in 2011.

of the income drop are (i) whether it is off of a low or high baseline, and (ii) to what extent it reflects a drop in total *consumption*. With respect to the first question, average annual parental earnings for my sample is $10,000 in the year of the child's 18th birthday and average observed household income (excluding the 18-year-old's SSI and including parent earnings and parent and sibling disability income) is $16,000. The second question—whether the fall in observed income reflects a fall in consumption—involves a number of considerations.

As noted by Meyer and Sullivan (2003), limited saving and dissaving in low-income populations mean that income may be a reasonable proxy for consumption for this group. A more critical issue is the role of unobserved sources of income in replacing the lost SSI income, including monetary and in-kind transfers from family members, non-disability public assistance, and unreported earnings. With respect to family member transfers, tabulations from the National Survey of SSI Children and Families (NSCF) indicate that 54 percent of youth between the ages of 22 and 24 years who were on SSI as children live with one or both parents; this proportion is higher for those still on SSI (60 percent) than those no longer on SSI (45 percent). Although family transfers are clearly relevant for many SSI youth, I find in Section III that parents do not respond to the loss of their child's SSI income by increasing their earnings or unearned income. With respect to non-disability public assistance, receipt rates estimated from the NSCF are nearly identical for those still on the program and those off the program, at around 10 percent for non-SSI cash welfare and 27 percent for food stamps. As expected, health insurance coverage is much higher for those still on SSI (96 percent) than for those no longer on SSI (52 percent), mostly due to Medicaid eligibility. Of course, the NSCF estimates are descriptive and not causal.[28] With respect to unreported earnings, the very limited research on this topic suggests that unreported work is common in low-income communities but generally accounts for a modest share of a given individual's income.[29] Taken together, this causal and descriptive evidence on unobserved sources of income—family transfers, other public assistance, and unreported earnings—suggests that unobserved income is unlikely to be a large or steady source of income for removed SSI youth. The drop in observed income may therefore translate into a substantial, if smaller, drop in consumption.

The key questions in interpreting the increase in income volatility are (i) to what extent the SSI population is able to smooth consumption over time, and (ii) how much of the additional volatility reflects choice versus risk. Many studies have documented low saving rates among the poor in the United States, which suggests limited intertemporal consumption smoothing.[30] Fewer studies have examined credit

[28] These relatively low rates of welfare receipt (for a low-income population) are not surprising given that most non-disability public assistance in the United States is targeted at families with children and most SSI young adults do not live with children. In most states in the relevant time period, childless and noncustodial adults do not qualify for TANF or Medicaid; food stamps are limited to 3 months per 3 years for adults working less than 20 hours/week; and the maximum EITC for childless adults is $500/year.

[29] Edin and Lein (1997) estimate that 40 percent of single mothers receiving welfare benefits engage in some unreported work, and unreported earnings constitute 12 percent of income averaged over all single mothers receiving welfare. Venkatesh (2009, p. 33), describing the underground economy in poor urban communities, reports that unreported work is common but "never steady enough to ensure this income stream for an entire year." For those hired off-the-books, "the work is really about survival, and it is doubtful that they are prepared to work full-time and pursue conventional employment paths."

[30] Dynan, Skinner, and Zeldes (2004) estimate annualized saving rates of 1 percent or less for the lowest income quintile in the United States, compared to 5–10 percent for the middle quintile. Meyer and Sullivan (2003) state

constraints among the American poor, though there is evidence that credit is costly for low-income families.[31] On the other hand, intra-household risk sharing may still allow for some consumption smoothing. The decomposition of volatility into choice versus risk is an outstanding question in the literature.

I do back-of-the-envelope calculations, presented in detail in the online Appendix, to estimate the recipient's welfare loss from SSI removal and decompose the loss into the part attributable to the fall in income levels versus the increase in income volatility. To summarize, I define the "constant equivalent" as the guaranteed consumption amount that makes the recipient indifferent between receiving that amount in each period and receiving his actual, volatile consumption stream. I assume that consumption in each year is equal to observed income in each year, subject to a minimum consumption floor. I assume a CRRA utility function and compare the utility loss from SSI removal when the agent is risk neutral versus risk averse. For $\gamma = 2$ using recipient income only, the welfare calculations indicate that 8–23 percent of the welfare loss is attributable to the increase in consumption volatility rather than to the fall in consumption levels, depending on the consumption floor. The proportion of the welfare loss from consumption volatility falls to 4–16 percent when including a constant fraction of parental income, since the parent and child income streams smooth each other out. However, the proportion from volatility approximately doubles, to 20–35 percent of the welfare loss, when parental transfers to the child increase after SSI removal.[32] For reasonable values of risk aversion, SSI may provide substantial income stabilization benefits to recipients.

Finally, I consider the implications of these results for social welfare using Hendren's (2016) "policy elasticity" approach, which uses a policy's effect on government revenue as a sufficient statistic for all behavioral responses. The IV estimates based on contemporaneous SSI enrollment indicate that removing an 18-year-old from SSI decreases annual SSI benefits by \$7,900, decreases annual DI benefits by \$600, and increases annual earnings by \$3,000. Assuming a 10 percent tax rate on earnings, the \$7,900 decrease in SSI expenditures reduces net government expenditures by \$8,800 $(= \$7{,}900 + \$600 + \$300)$, imposing a fiscal externality of 11 percent $(= \$900/\$7{,}900)$. In the case where recipients value each dollar of SSI like cash earnings, the marginal value of public funds (MVPF) derived in Hendren (2016) is $\frac{1}{1+FE} = \frac{1}{1.11} = 0.90$. However, if recipients are risk averse and value the stability of SSI income relative to earnings, then the MVPF is higher. Taking the "constant equivalent" calculations above using $\gamma = 2$, the MVPF is $\frac{1.15}{1.11} = 1.03$ since \$1.00 in stable SSI income has the same value as \$1.15 in earnings. The MVPF

that income and expenditures are approximately equal for low-income single mothers because "little saving and dissaving occurs for this group," though income and consumption may still differ due to the services that flow from durable expenditures. Morduch and Schneider (2014) find a ratio of annual deposits to year-end balance of 50:1 for low- and middle-income Americans, meaning that there is little accumulation of saving across years.

[31] According to the FDIC (2014), 28 percent of households with incomes of less than \$15,000 have no bank account, and another 22 percent have a bank account but rely on alternative financial services like check cashing and payday lending. Even among banked households, Morduch and Schneider (2014) document costly strategies to smooth consumption, such as using overdrafts, varying on-time and late bill payments each month, and using short-term credit from friends or family and alternative financial services.

[32] This increase is driven by two factors: (i) the smaller consumption loss mechanically increases the proportion of the loss from volatility, and (ii) parental income is more positively correlated with recipient income for recipients no longer on SSI.

of SSI is higher than those that Hendren (2016) calculates for other safety net programs, including EITC (0.88), food stamps (0.53 to 0.66), and housing vouchers (0.79). Intuitively, SSI has a high MVPF because it produces very little crowd out in earnings given the low potential earnings of SSI youth and because SSI is valued at least as much as cash.

VI. Conclusion

I study the long-term effects of removing SSI youth from the program using a regression discontinuity design based on a 1996 welfare reform change, paired with administrative data from the Social Security Administration. I find that most SSI youth who are removed have a small earnings response and minimal earnings growth over time. They experience a large reduction in observed income and an increase in income volatility. In contrast, research on the 1996 welfare reform law finds that single mothers who were removed from welfare on average had higher employment and income after removal (see, e.g., Blank 2002), though Bitler, Gelbach, and Hoynes (2006) find null effects below the median. Even if, as the literature suggests, the late-1990s booming economy contributed to the positive outcomes of single mothers, that booming economy did not lift SSI youth into steady employment.

These results raise the question of *why* SSI youth do not recover the lost SSI income. The substantially lower earnings of removed SSI youth relative to other disadvantaged populations suggests that disability—either directly through health, or indirectly through societal expectations and incentives—plays an important role in the low earnings levels of removed SSI youth. Another explanation is that the effects of poverty, including low education levels, confine SSI youth to low-wage jobs and marginal labor force attachment. The fact that the earnings response is increasing in parental earnings suggests a role for the poverty channel. Understanding the relative roles of disability and poverty in the income drop is important for considering the usefulness of each as a tag for welfare programs.

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