THREE ESSAYS ON THE IMPACTS OF CHILD SUPORT PROGRAM ON SINGLE MOTHERS' MATERIAL WELL-BENG, LABOR SUPPLY AND CHILDREN'S ACHEIVMENTS

by

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(Under the Direction of Patryk Babiarz)

ABSTRACT

This dissertation examines the importance of Child Support Enforcement program as an anti-poverty policy aiming at protecting and enhancing the well-being of female-headed families and recipient children. Three essays investigate both the immediate and the long-term effects of child support transfer on mother-only families' economic well-being and their children's achievements. In the first essay (Chapter 2) titled "Child support receipt and material well-being of single mothers," I investigate the extent to which receiving a child support transfer, as well as the amount of transfer, affect the recipients' consumption of market goods and services. I find no evidence of a significant relationship between child support transfer and recipients' consumption. Chapter 3 of my dissertation, entitled "Child support receipt and single mothers' labor supply," tests the possible impact of child support on single mothers' labor market decision-making. This chapter complements and extends the analysis from the first essay. The economic theory posits

that an exogenous increase in material resources should increase consumption of market goods and services. However, individuals could also derive utility from increased consumption of leisure and, if the gain in utility form leisure outweighs the marginal utility of consumption of goods and services, the effect of child support transfer might materialize through reduced supply of labor. I explore the trade-off between consumption of goods and non-labor time by estimating the effect of child support transfer on both the intensive and the extensive margins of labor supply. The estimations reveal that both receiving the child support and the amount received are related to single mothers' labor decisions regarding the hours of work. The fourth chapter, entitled "Child support receipt and children's' achievements" examines the long-lasting impacts of child support transfer on children's future success and adulthood achievements. By following a cohort of recipients through time, I attempt to document major differences between recipients and nonrecipients in terms of their educational attainment, labor market success, and economic well-being. My empirical analysis shows that the receipt of child support transfer enhances the beneficiaries' chance of completing high school, but has limited effects on other outcomes.

Index words: Child support, Single mothers, Consumption, Labor supply, Economic well-being, Material well-being, Children's achievemen

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CHAPTER 1

INTRODUCTION

This dissertation comprises three essays that investigate the impacts of Child Support Enforcement (CSE) program on female-headed families' material well-being, labor supply, and children's achievements. The CSE system is a collection of federal and state laws and regulations that leverage monetary transfers from non-custodial to custodial parents. It is one of the largest government programs targeting low-income families with children. Since the program can offset or prevent government welfare, it enjoys unequivocal support of policy makers. However, the available evidence on the extent to which the CSE policy has enhanced the economic well-being of recipients is not complete. In particular, the extant literature offers limited documentation of the impacts of CSE on the recipient families' consumption or the child's academic and professional achievements.

A child support transfer is designed to expand the recipient family's budget. Microeconomic theory suggests that this should lead to an income effect and increased consumption of normal goods. However, the child support transfer could substitute for earned income, especially if low-income households have strong preference for leisure due to its low opportunity cost. Therefore, the theory does not offer an unambiguous prediction of the impacts of CSE. In the first two essays, I test empirically the effects of CSE on household consumption and labor supply. I use longitudinal data from multiple waves of the Panel Study of Income Dynamics, supplemented with data from the Consumer Expenditure Survey, to estimate the individual fixed effects instrumental variables models of recipient families' consumption (essay one) and labor supply (essay two). This estimation strategy allows me to eliminate any possible biases caused by unobserved time-invariant factors and endogenous explanatory variables.

In the third essay I focus on the long-term effects of CSE policy on various indicators of children's success. Literature has argued convincingly that the material well-being and domestic events experienced during childhood could determine the child's subsequent educational and professional achievements. Utilizing the sample of children respondents from the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97), I estimate a series of regression models designed to compare the achievements of child support recipients with non-recipients. Similarly to the previous essays, I use instrumental variables and two-stage least square regression models to alleviate concerns about endogeneity and selection biases.

CHAPTER 2

ESSAY I: CHILD SUPPORT RECEIPT AND MATERIAL WELL-BEING OF SINGLE MOTHERS

2.1 INTRODUCTION

Single mothers often face more severe economic and social challenges than the two-parent households. Recent data collected by the Current Population Survey reveal that roughly 13.4 million single parents live with at least one dependent child 21 years old or younger (Current Population Reports, 2015). The same source indicates that five out of six of these custodial parents are single mothers. Government data also suggest that 39.8 percent of female-headed families with children were below the federal definition of poverty threshold in 2014, while the poverty rate for the more traditional two-parent families with children was estimated at 8.2 percent in the same year (U.S. Census Bureau, 2015). The disadvantaged economic status of single mothers could negatively impact the well-being of their children (McLanahan & Booth, 1989; Thomson, Hanson, & McLanahan, 1994). Literature documents a strong relationship between childhood poverty and childhood or adolescence well-being (Brooks-Gunn & Duncan, 1997, Duncan, Ziol-Guest, & Kalil, 2010). Such findings are consistent with the human capital theory, which predicts the deterioration of quality of children in absence of time- and money-intensive goods and services provided by both parents (Becker & Lewis, 1974). Responding to these undesirable trends, public policy makers have implemented various programs in order to enhance the economic status of single mothers and their children.

Two types of public policies have been developed to support underprivileged single mothers and their children. The first group comprises of welfare programs through which the government transfers cash or in-kind support directly to the eligible individuals. For example, Aid to Families with Dependent Children (AFDC) was the first means-tested federal welfare program created to financially support disadvantaged families with dependent children. It was introduced in 1935 and eventually replaced by the Temporary Assistance for Needy Families (TANF) in 1996. This policy overhaul was motivated by a dramatic increase in the AFDC caseload and expenditures, as well as some concerns that the program decreased single mothers' labor supply, discouraged marriage, and induced out of wedlock childbearing (Moffitt, 1992; Moffitt, 1998; Hoynes, 1997). The TANF relies on stricter eligibility rules (e.g., work requirement) and several studies concluded that it successfully improves the recipients' quality of life (e.g., Meyer & Sullivan, 2006; Hoynes & Schanzenbach, 2007).

The second type of government aid policy targeting single parents is the CSE program enacted in 1975. The growing concerns over prevalence of single-motherhood and its negative consequences for government budgets led policymakers to propose regulations that impose obligations on both biological parents to financially contribute to their children's living expenses. The CSE program is a collection of federal and state laws designed to boost an absent parent's involvement in their child's life. The CSE, through a state court order, attempts to provide custodial parents (usually mothers) a constant flow of financial transfers from nonresident parents. In contrast to the means-tested programs like TANF, the receipt of child support is not contingent upon a single mother's employment or income. Recently, child support has become even more important due to a dramatic increase in the number of children growing up in female-headed households (Cancian, Meyer, & Han, 2011). In order to strengthen the enforcement of child support policies and reduce the negative consequences of economic deprivation, the policy-makers have gradually introduced numerous new enforcement measures. Moreover, the federal government's role in child support enforcement process has expanded through several waves of legislation since the late 1980s (Cahn & Murphy, 2000). Despite these incremental improvements, the establishment and enforcement of child support orders vary by states and each state government operates a somewhat unique system (Garfinkel, Miller, McLanahan, & Hanson 1998; Sorensen & Hill, 2002). Therefore, the effectiveness of CSE policy also varies considerably between the states.

Like any other program, the CSE needs to be evaluated to determine the degree to which the planned policy goals have been achieved and whether or not there exist some unintended outcomes. As outlined by Garfinkel and Robins (1993), the evaluation of CSE program should include three steps. Evaluating the implementation of the program takes place in the first step. Next, the program performance indicators, such as child support order establishment rates and collectability must be assessed. The final stage consists of evaluating the recipients' individuallevel outcomes, such as the interactions of transfer receipt with resource allocation decisions and welfare outcomes. While the documentation of CSE implementation and performance metrics is abundant in the literature, past research paid relatively little attention to the household or individual-level outcomes of the child support policy, particularly to the recipients' consumption. Some researchers investigate the effectiveness of CSE policy in terms of broad measures such as collection success rates and amounts received (Case, Lin, & McLanahan, 2003; Freeman & Waldfogel, 2000; Haung, 2009; Sorensen & Hill, 2002). These studies demonstrate that strict enforcement measures generally enhanced the policy outcomes. However, an increase in the likelihood of receipt does not necessarily imply an improvement in the recipients' material wellbeing. Other studies focus on the ability of child support policy to lift recipients out of poverty and discovered a modest antipoverty effect among single mothers (Bartfeld, 2000; Cancian, Meyer, & Park 2003; Meyer & Hu 1999). These studies calculate the recipients' income with and without child support and compared the percentages of recipient families falling below the poverty thresholds. A major shortcoming of this approach is that the federal poverty line is an inaccurate measure of poverty and economic hardship (Citro & Michael, 1995).

In order to comprehensively evaluate a program's impacts, all possible outcomes must be taken into account. One implication of the strengthened CSE is that female-headed families would be less likely to experience material hardship. In other words, child support recipients are expected to be better off in terms of their material well-being. In the current study, I extend previous research by investigating the impact of CSE policy on material well-being of single mothers. In particular, I attempt to confirm the intuitive thesis that the receipt of child support, as well as the amount of payment, enhances the single-mother families' consumption outcomes. I chose to operationalize well-being with consumption based on evidence of its conceptual and measurement superiority over alternative measures of material well-being such as income. Meyer and Sullivan (2003) argue that, unlike income, a consumption-based measure of economic well-being reflects both private and government transfers, better captures the permanent income of low-income families, and does not suffer from under-reporting.

2.2 LITERATURE REVIEW

Past research describes the adverse economic consequences associated with single motherhood. Literature shows that a separation or a divorce usually enhance the fathers' economic well-being, while the separated or divorced mothers experience a sharp decline in their economic resources (Smock, 1994). Estimates of the decline in women's household income caused by a divorce vary between 23 to 40 percent (Horvath & Peters 1999). Studies also indicate that the dissolution of cohabitation affects single parent's economic well-being in a manner similar to the dissolution of formal marriage (Avellar & Smock 2004).

A separate body of literature examines correlations between out-of-wedlock childbearing and negative economic consequences to never-married mothers (Duncan & Hoffman, 1990; Foster, Jones, & Hoffman, 1998; Hoffman & Foster, 2000). For instance, Foster, Jones, and Hoffman (1998) conclude that the economic well-being of teenage and older never-married mothers decreases significantly after giving birth. In response to the rapidly increasing number of female-headed families during the 1980s, scholars and family counselors emphasized the critical role of public policy in providing support for single mothers and advocated for programs that would improve the female-headed families' economic well-being (Garfinkle & McLanahan 1985; McLanahan & Garfinkle 1989; McLanahan & Booth 1989). Several such policy measures and welfare programs were implemented, either as new solutions or reforms of existing policies, e.g., Omnibus Budget Reconciliation Act of 1987 or the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA).

A large body of literature documents the impacts of welfare and anti-poverty programs on single mothers' economic behavior and well-being. For example, researchers demonstrate that cash transfers (AFDC/TANF) create a significant disincentive for single mothers to work (Moffitt 1992). Utilizing longitudinal data on single mothers obtained from the Panel Study of Income Dynamics, Gruber (2000) discovers a positive correlation between cash benefits and households' food and housing consumption. Meyer and Sullivan (2006) investigate the extent to which the 1996 welfare reform (PRWORA) affected the material well-being of single mothers. They show some evidence that the new welfare system improves the single mothers' material well-being. A similar result was obtained by Winship and Jencks (2004) in a study of policy changes during the 1990s including the EITC expansion of 1993 and PRWORA of 1996. The impacts of in-kind transfer programs have also been examined extensively. For example, Hoynes & Schansenbach (2009) study the state-level heterogeneity in the implementation of food stamp program during the 1960s and 1970s and its effects on food expenditure of recipients. Their results suggest that the food stamp receipt leads to an increase in participants' total food expenditure. According to their findings, the mother-only families' marginal propensity to consume (MPC) out of food stamps is three times as large as the MPC out cash income.

Past studies utilize a wide range of measures of economic well-being or economic hardship. Wealth or income-based measures such as the federal definition of poverty are popular, but also criticized extensively (Citro & Michael 1995). For instance, Meyer and Sullivan (2012) argue that the official poverty algorithm exempts from the calculation of total resources available to lowincome families any tax credits, noncash, and cash benefits. Moreover, the self-reported measures of wealth and income are likely measured with error in surveys, and this error could be substantial at the lower end of wealth and income distribution. Mayer and Sullivan (2003) argue that the measures of well-being based on reported consumption expenditures offer several advantages over the traditional wealth or income-based metrics. First, consumption closely measures the permanent income. Second, unlike income-based measures, it is much less likely to suffer from the underreporting problem. Consumption expenditures are also likely to capture the value of private and government transfers more precisely than income or wealth. Consequently, consumption spending is a superior measure for the purpose of evaluation of welfare programs (Meyer & Sullivan 2003).

This essay contributes to a relatively scarce literature that attempted to empirically evaluate household-level economic outcomes of the CSE policy. Using the National Survey of American Families, Sorensen and Zibman (2000) examine the extent to which single mothers depend on financial support provided by absent fathers. They discover that, although poor recipients are less likely to receive child support compared to their non-poor counterparts, child support income comprises a relatively large share of their total household income. Nichols-Casebolt (1986) compares the economic status of potential recipients under current CSE system and a reformed system which proposed stricter enforcement measures and targets a broader pool of beneficiaries. She concludes that the proposed policy revisions could enhance the economic well-being of impoverished eligible mothers. The reform was later enacted and implemented in Wisconsin.

Bertfeld (2000) compares potential impacts of different child support calculation guidelines on the divorced mothers' economic well-being. Her statistical simulations demonstrate that the child support transfer modestly reduces the poverty rate among low-income custodial mothers. At the same time, the relatively more affluent divorced mothers reap the most benefits out of the current child support system. Several other studies demonstrate similar modest antipoverty effect of CSE policy (Bartfeld 2000; Cancian, Meyer, & Park 2003; Meyer & Hu 1999). For instance, Meyer and Hu (1999) use the Current Population Survey data to estimate the antipoverty effectiveness of the child support policy. According to their findings, up to seven percent of poor single mother families were elevated above the poverty threshold due to the program existence. The same study also concludes that strengthening the effectiveness of child support policy has the ability to reduce poverty rates. Only one study examines the relationship between child support income and recipients' consumption. Del Boca and Flinn (1993) find that divorced mothers allocate a larger portion of their child support income to child-related goods and services compared to their non-child support income.

In summary, the existing literature is deficient regarding the impacts of child support transfer on various aspects of the recipient family's well-being. In this essay, I strive to contribute to the literature and address this shortfall by identifying the direct impact of child support on consumption outcomes of beneficiaries.

2.3 METHODOLOGY

The data for empirical analysis is drawn from the 1999-2013 waves of the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal biennial survey of the American households that began in 1968. The dataset contains detailed household- and person-level demographic information, as well as records of family social and economic living conditions. I restrict the analysis sample to single mother families observed within the 1999-2013 period, who are potentially eligible to receive child support and exclude families with a child whose father is deceased. The analysis sample is an unbalanced panel of 920 families (total of 7,367 family-survey wave observations). Given that my empirical analyses aim at estimating the "within family" impacts of child support, only those families that responded to two or more consecutive surveys are included in the analysis.

To test the impact of child support receipt on family economic well-being I estimate the following model:

$$Y_{it} = \gamma C_{ist} + \beta_1 X_{it} + \beta_2 Z_{st} + u_i + w_s + v_t + \varepsilon_{ist}$$

$$(2.1)$$

where *C* represents child support variables measured for family *i* residing in state *s* at time *t*, *X* and *Z*, respectively, are the vectors of individual and state-specific control variables. The models are estimated with individual (*u*), state (*w*) and time fixed (*v*) effects that control for any unobserved and time-invariant factors that might impact an outcome of interest. For instance, single mothers' marital experience might determine their preferences towards filing an application for a child support order. State-level divorce and child support regulations could also affect mothers' willingness and ability to pursue a child support order as well as the amount of payment. Femaleheaded families who live in states with no-fault divorce or unilateral divorce laws receive lower amounts of child support compared to the residents of states with bilateral divorce laws (Case, Lin & McLanahan, 2003). Sorensen and Halpern (1999) show that the higher the number of child support laws, the higher the rate of child support receipt.

Several variables are used to operationalize the family economic well-being (Y). The first variable measures total annual consumption of market goods. Rather than measuring consumption as the sum of all expenditures, this variable summarizes expenditures on non-durables (food at home and away from home, utilities, transportation related expenses, and child care) and adds to this sum the estimates of service flows of durables such as cars or houses. Such an approach produces a better measure of utility of consumption as it approximates consumers' permanent income and measures economic well-being with much smaller error than current income, particularly for low-income consumers (Sullivan & Meyer, 2003). Also, this measurement of

consumption does not suffer from "lumps" apparent in expenditures that arise in years when consumers purchase expensive durables. My procedure for converting home and car expenditures into service flows is similar to the procedures utilized by Cutler, Katz, Card, and Hall (1991) and Sullivan and Meyer (2003). For renters, the service flow of apartments is calculated as the sum of rent expenditures. For homeowners, the service flow is calculated as the rental equivalent value, i.e., the amount for which the home could be rented. The rental equivalents are not available in the PSID data, and I used the Consumer Expenditure Survey (CE) for years that match the PSID waves to predict rental equivalents for homeowners. Next, I regress the self-reported rental equivalent value of home on the value of the home and a set of family composition and house type dummies. I then use the coefficient estimates obtained from these regressions to calculate the rental equivalents of homes owned by PSID respondents. The final measure of total consumption does not include health care and education spending. Both these categories of expenditures could be classified as investments.

In addition to the aggregated consumption, my empirical investigation utilizes as dependent variables a number of more narrowly defined measures of consumption. In particular, I examine the isolated impacts of child support policy on expenditures on food, transportation, child care and utilities. This allows me to determine the contributions of various components of consumption to the variation in total consumption triggered by the receipt of child support.

My key independent variable, i.e., the measure of child support transfer is defined as a binary indicator of receipt (child support receipt) or alternatively as the amount of transfer (child support income). The use of binary child support receipt allows me to compare the outcomes before and after the transfer was received. By measuring the amount of transfer, I examine the heterogeneity in the effect of child support income on the average consumption outcomes.

The majority of antipoverty programs, including the CSE, are designed to target a specific group of beneficiaries. This aspect of the policy induces some people to "self-select" into the recipients group. As a result, single mothers who choose to receive child support could be, at least in some aspects, different from non-recipients. Such an endogeneity problem would render the coefficient estimate on child support in Equation (1.1) biased and inconsistent. If the endogeneity issue is caused by some observed characteristics of individuals, including a vector of control variables can resolve the issue. However, sometimes unobserved traits (e.g., personality characteristics) cause the self-selection problem. Such an endogeneity problem and the resultant bias to regression estimates would arise in the present study if single mothers with lower economic resources are more likely to pursue a child support order. Furthermore, their economic well-being might be determined by unobserved characteristics that simultaneously affect the likelihood of having a child and the decision to pursue child support. To address these potential sources of bias I employ a two-step instrumental variables procedure (2SLS). First, I estimate the following equation using the ordinary least squares procedure:

$$C_{it} = \varphi I_{st} + \delta_1 X_{it} + \delta_2 Z_{st} + \tau_{ist}$$

$$\tag{2.2}$$

where I is the vector of instrumental variables and the remaining elements are defined as in equation (1) above. The vector of instruments includes median income in the custodial mothers' state of residence, demographic characteristics of respondents' state of residence (i.e., divorce rate and teenage birth rate), state-level average child support payments and the maximum TANF payment to a family of three in the mother's state of residence. Then, the predicted values of C obtained from equation (2.2) are substituted into the original equation. These instruments not only isolate the variation in child support variables that is uncorrelated with the error term, but also partially capture some time-varying unobserved factors that could affect the receipt and amount of

child support. Moreover, the instrumental variables method could resolve the problem of measurement error bias. The PSID data set contains the information on child support receipt and its amount but does not explicitly distinguish between formal and informal transfers. Thus, the reported child support measures might represent both types of child support.

The binary independent variable (receipt of child support), which is likely endogenous to outcomes of interest, distinguishes recipients from non-recipients in my empirical model. The OLS estimation of a dichotomous variable could provide inaccurate and nonsensical prediction. This issue arises due to the nonlinear nature of the distribution function associated with the binary endogenous variable. Thus, one might utilize a nonlinear first stage, such as a probit specification to predict the dichotomous treatment variable. However, using these nonlinear fitted values in the second stage would produce inconsistent estimates of coefficients of interest (the so called "forbidden regression"). To avoid the "forbidden regression" problem, instead of substituting child support variables with their nonlinear predicted values, I can use these nonlinear fitted values directly as instruments (Angrist & Pischke, 2008). I predict the probabilities of child support receipt using a probit regression:

$$\Pr(C_{it} = 1) = \Psi[\varphi I_{st} + \delta_1 X_{it} + \delta_2 Z_{st}]$$
(2.3)

where $\Psi(.)$ represents the cumulative distribution function of normal distribution. Next, I use the predicted probability generated by equation (2.3) as an instrument for the binary endogenous variable (receipt of child support) in equations (2.1) and (2.2) in a conventional two stage procedure.

2.4 **Results**

2.4.1 DESCRIPTIVE STSTISTICES

Table 2.1 reports the selected descriptive statistics, separately for the full sample and for the sub-samples of single mothers who are/are not recipients of child support. The pooled sample consists of 7,367 single mothers, 2,480 of whom received child support between 1999 and 2013, and 4,871 custodial mothers who were not the recipient of child support during the same period. There are significant differences between recipients and non-recipients of child support with regard to their total family income and earnings. For instance, the average annual family income of the child support recipient is \$35,103, whereas the average annual family income of women with no child support is \$23,840 (all dollar amounts are converted to 2013 dollars using the U.S. Bureau of Labor Statistics Consumer Price Index). The average child support transfer (\$5,168) received by the recipient mothers accounts for almost half of this difference (\$11,263).

The mean value of annual household consumption is \$24,916 among single mothers with child support income, and \$20,060 among those who are not receiving child support.¹ The same pattern of higher average consumption is visible in comparisons of the mean value of food expenditures and consumption of housing of the treated group with the untreated custodial mothers. Women with child support appear to have higher accumulated wealth (\$10,170) compared to those without child support income (\$4,448). The differences between recipients and non-recipients in terms of labor supply appear to be subtler than the differences in income and consumption. About 70 percent of the analyzed women worked at some point during the period of

^{1.} The difference between single mothers' annual income and consumption could imply that they save a portion of their income.

investigation, with the average weekly number of hours worked measured at 29. About 70 percent of women who do not receive child support work and this estimate is 9 percentage points lower than the equivalent measure for the sub-sample of women who receive child support.

In terms of the remaining variables, the analyzed women are 36 years old, with approximately 12 years of formal education, and about 2 children. The discrepancies between two groups in terms of schooling years, age, and the number of children appear to be negligible. However, I found that the average age of the child of a single mother with child support (about 8 years old) is about 2 years more than the average age of the child of a single mother who does not receive child support.

2.4.2 IMPACT OF CHILD SUPPORT RECEIPT ON CONSUMPTION

In this section I report and interpret the estimates of regression equations described above. As previously explained, my preferred technique for estimating the impact of child support variables on female-headed families' consumption is the 2 stage least squares (2SLS) method. However, for comparison purposes, I also report the results obtained using alternative methods such as the ordinary least squares (OLS) regressions performed on the pooled data from all survey waves and the fixed-effects (FE) least squares regressions. The OLS estimates are based on crosssectional "between" individual comparisons while the FE estimations difference out the individual-level heterogeneity to estimate the "within" effects, but do not isolate the exogenous variation in child support receipt or amount. I included the same set of control variables in all specifications.²

Table 2.5 shows the details of probit regression applied to calculate the probabilities of child support receipt. As explained above, variables measured at the state level such as divorce rate, teenage birth rate, proportion of female-headed families, average income, average child support, as well as the maximum TANF benefit, are used to identify the exogenous variation in the probability of child support receipt. The state divorce rate and the maximum TANF payment are statistically significantly correlated with the likelihood of being a child support receipt. Table 2.6 shows the results of the first-stage of 2SLS regression where the fitted support receipt probabilities are used as instrument to isolate the exogenous variation in the receipt of child support. The coefficient on fitted probabilities is expectedly positive and statistically significant, and the value of partial F statistic for this regression is above 10, which indicates adequate strength of the identifying instrumentation.

Table 2.2 summarizes the estimates from regressions of the natural logarithm of total family consumption on child support receipt, individual and state-level control variables, and year dummies. The estimated effects of child support receipt are statistically insignificant in all three specifications. Columns 1 and 2 show that the partial correlations between child support receipt and consumption measured for the sampled individuals are quantitatively negligible. The coefficient from instrumental variables fixed-effects (IV-FE) estimation reported in Column 3 reveals the expected positive impact of child support on consumption. However, the large standard

² I also included time-invariant control variables, such as race in my OLS equations. Since the results were hardly different from those discussed in this section, they are not reported here.

error of this estimate rules out its statistical significance implying that the finding of positive impact cannot be extrapolated to the studied population.

The sizable difference in magnitudes of estimated effects between the results reported in the first two columns and the result obtained using instrumental variables approach provides some justification for the use of two-stage estimation. The differences could be attributed to the problem of endogeneity of child support described previously, or an error in measurement of the child support receipt which would additionally bias the coefficients. In fact, the information on child support recorded in PSID does not allow for unambiguous separation of court-ordered child support transfers from unofficial transfers voluntarily paid by the absent fathers. To the extent that my instruments isolate the exogenous variation in the receipt of transfer and the amount received, the instrumental variable approach offers a suitable solution for both the endogeneity and measurement error problems. Nonetheless, the results still do not substantiate the hypothesized impact of child support receipt on family material well-being.³

I applied the same identification strategy to evaluate the impact of child support receipt on alternative measures of consumption. In particular, by regressing the natural logarithm of expenditures on food and the natural logarithm of consumption of housing on the binary child support variable and a set of controls, I attempted to identify the possible "narrower" effects on the two key components of consumption. Table 2.3 summarizes the findings on impacts of child support receipt and control variables on female-headed families' food expenditures. Unlike the previously discussed findings, all three estimations consistently generated positive coefficients on

³ The psychological status of single mothers also might affect their consumption. To control for this factor, I include in my regressions a measure of psychological distress. This scale includes six items, each of which is developed to measure a different aspect of individuals' psychological health. Because this variable has been included in the PSID since 2007, I am only able to run this analysis with a partial sample. The regression results remain unchanged after controlling for single mothers' psychological distress.

child support receipt. The OLS estimate is marginally statistically significant. However, adding controls for unobserved time-invariant effects drives away the significance of the effect of child support receipt. Similarly, correcting for possible biases in the coefficient estimate using two-stage estimation procedure leads to the statistically insignificant result.

Table 2.4 reports the regression results for consumption of housing. Reinforcing the previously discussed findings, results reveal positive but statistically insignificant effect of the receipt of child support. In terms of other variables, positive changes in wealth are associated with increased total consumption, while the increase in non-child support income exerts positive and statistically significant effect on food expenditures or consumption of housing, all of which is compatible with intuitive expectations. For example, results in Column 3 of Tables 2.3 and 2.4 suggest that a one percent increase in single mothers' non-child support income is associated with 0.07 and 0.1 percent increases in consumption of food and housing, respectively.

2.4.3 IMPACT OF CHILD SUPPORT INCOME ON CONSUMPTION

To examine the effect of child support amount on consumption I re-estimate the same regression models using the amount of child support transfer as the key independent variable. Table 2.7 shows the OLS, FE and IV-FE parameter estimates of total consumption equations with the log transformed child support income.⁴ The logarithmic transformation enables me to interpret the coefficients on child support income as elasticities. Similarly to the results reported in Table 2.2, the only positive elasticity estimate of the child support income is obtained from the IV-FE

⁴ Table 2.10 reports the details of first stage estimation for the instrumental variable models with the amount of child support income as the endogenous regressor.

model. However, this coefficient is also statically insignificant. Therefore, my analysis provides no convincing evidence that single mothers who receive higher child support income enjoy higher consumption.

Table 2.8 presents the results from regressions that relate food expenditures to the amount received in child support. The calculated food expenditure elasticities of child support income are positive, but only the OLS estimate is statistically different from zero. Although the effect estimated by IV-FE model is quantitatively sizable, the large size of standard error again rules out its statistical significance. Finally, the findings on impact of child support income on single mothers' consumption of housing are presented in Table 2.9. Consistently with previous findings, the preferred IV-FE estimations provide no evidence of statistically or quantitatively significant impact of the support received on housing outlays.

2.5 CONCLUSION

The dire economic situation of families headed by unmarried or divorced mothers has been a persistent concern for policy in recent years. The CSE program has been introduced to boost the flow of financial support from absent fathers to female-headed families who are deprived of resources usually available to two-parent families. Although policy-makers have attempted to increase the likelihood that the eligible mothers receive child support by strengthening various provisions of the policy, the effects of CSE on the economic well-being of the recipient families' have not been documented in detail. In this essay, I attempted to understand and measure the responsiveness of household consumption CSE program. Results from the econometric analysis suggest that the consumption gains generated due to receipt of child support income are negligible. According to my estimates, receiving the child support transfer does not increase recipients' total consumption of goods and services. There is also no evidence that any particular component of consumption such as food expenses or consumption of housing increase with the receipt of child support. Similarly, the amount of transfer received by recipients does not seem to be significantly correlated with single mothers' consumption.

The absence of an observable response of consumption to a child support transfer is unexpected and necessitates further analysis. This finding might imply that the extra financial resource, rather than incentivizing growth in consumption, prompts mothers of recipient children to substitute the transfer for earned income. In the next chapter, I present a more explicit account of economic theory that predicts household behavior in the presence of extra income and test the effects of child support on labor market participation.

Although the findings described in this essay contribute to the literature by providing valuable assessment of the role of child support in enhancing custodial mothers' material well-being, the results should be interpreted with some caution. The PSID does not contain any information regarding non-pecuniary contributions of non-resident fathers, which can potentially affect the single mother's resource allocation. If fathers supplement the consumption of recipient families with in-kind contributions or informal monetary transfers in addition to the formal child support, this could explain the negligible response of consumption.

| | All Women | Women with Child Support Income | Women without Child Support Income |
|---------------------------|-----------|------------------------------------|---------------------------------------|
| Variables | (N=7,367) | (N=2,480) | (N=4,871) |
| Income | \$28,564 | \$35,103 | \$23,840 |
| Labor Income | \$18,176 | \$18,474 | \$14,937 |
| Child Support Income | \$2,187 | \$5,168 | \$0 |
| Total Consumption | \$22,117 | \$24,916 | \$20,060 |
| Food Expenditure | \$4,237 | \$4,667 | \$3,919 |
| Housing Expenditure | \$7,101 | \$7,785 | \$6,578 |
| Wealth | \$6,914 | \$10,170 | \$4,448 |
| Weekly Hours of Work | 29.27 | 30.72 | 28.42 |
| Employed | 0.738 | 0.791 | 0.701 |
| Years of Schooling | 12.27 | 12.91 | 11.83 |
| Age | 36.29 | 37.39 | 35.59 |
| Number of Children | 1.86 | 1.80 | 1.92 |
| Age of the Youngest Child | 7.29 | 8.26 | 6.61 |

Table 2.1: Selected Descriptive Statistics

*All statistics are adjusted by sample weights to be representative of the population.

| | OLS | FE | IV-FE |
|--------------------------------|-------------------------|-------------------------|-------------------------|
| Variables | Log (Total consumption) | Log (Total consumption) | Log (Total consumption) |
| | | | |
| Receipt of child support | -0.0190 | -0.0492 | 3.0533 |
| | (0.1050) | (0.1550) | (3.8414) |
| Log (Non-child support income) | 0.0743** | 0.0254 | 0.1650 |
| | (0.0347) | (0.0422) | (0.1074) |
| Wealth | 0.0020** | 0.0045** | 0.0558** |
| | (0.0098) | (0.0023) | (0.0274) |
| Age | 0.0984*** | -0.0502 | -0.1130 |
| | (0.0339) | (0.1311) | (0.1552) |
| Age square | -0.0014*** | -0.0002 | 0.0008 |
| | (0.0004) | (0.0008) | (0.0015) |
| Years of schooling | 0.1360*** | 0.0218 | -0.0057 |
| | (0.0268) | (0.0788) | (0.0883) |
| Number of children | 0.0936** | 0.1150 | 0.0049 |
| | (0.0452) | (0.0842) | (0.1620) |
| Age of the youngest child | 0.0068 | 0.0263 | -0.0015 |
| | (0.0129) | (0.0183) | (0.0408) |
| State unemployment rate | -0.0103 | 0.0197 | 0.0417 |
| | (0.0395) | (0.053) | (0.0717) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 2.4470*** | 7.360** | 6.748* |
| | (0.7191) | (3.6340) | (3.7560) |
| Ν | 7045 | 7045 | 7045 |
| R-squared | 0.022 | 0.011 | 0.004 |

Table 2.2: Estimates of the Impact of Child Support Receipt on Consumption.

| | OLS | FE | IV-FE |
|--------------------------------|----------------------------|----------------------------|----------------------------|
| Variables | Log (Food expenditures) | Log (Food expenditures) | Log (Food expenditures) |
| | | | |
| Receipt of child support | 0.0705* | 0.0744 | 1.2320 |
| | (0.0428) | (0.0628) | (1.5482) |
| Log (Non-child support income) | 0.1610*** | 0.0552*** | 0.0728* |
| | (0.0220) | (0.0171) | (0.0403) |
| Wealth | 0.0019*** | 0.0005 | 0.0086 |
| | (0.0003) | (0.0010) | (0.0111) |
| Age | 0.0067 | 0.1290** | 0.1040* |
| | (0.0122) | (0.0533) | (0.0624) |
| Age square | 0.0049 | -0.0006* | (0.0002) |
| | (0.0001) | (0.0003) | (0.0006) |
| Years of schooling | 0.0722*** | -0.0093 | (0.0202) |
| | (0.0105) | (0.0320) | (0.0356) |
| Number of children | 0.0017 | 0.0343 | (0.0025) |
| | (0.0232) | (0.0342) | (0.0654) |
| Age of the youngest child | 0.0202*** | 0.0154** | 0.0043 |
| | (0.0051) | (0.0074) | (0.0165) |
| State unemployment rate | -0.0365** | -0.0313 | (0.0214) |
| | (0.0173) | (0.0265) | (0.0289) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 4.6252*** | 3.7204** | 3.7951** |
| | (0.3061) | (1.4763) | (1.518) |
| Ν | 7045 | 7045 | 7045 |
| R-squared | 0.119 | 0.039 | 0.035 |

Table 2.3: Estimates of the Impact of Child Support Receipt on Food Expenditure.

| | OLS | FE | IV-FE |
|--------------------------------|------------------------------|------------------------------|--------------------------------|
| Variables | Log (Consumption of housing) | Log (Consumption of housing) | Log (Consumption of housing |
| | | | |
| Receipt of child support | 0.0282 | -0.0230 | 1.6670 |
| | (0.0316) | (0.0454) | (1.2230) |
| Log (Non-child support income) | 0.1231*** | 0.0675*** | 0.0970*** |
| | (0.0160) | (0.0124) | (0.0340) |
| Wealth | 0.0012*** | 0.0068 | 0.0065 |
| | (0.0002) | (0.0007) | (0.0087) |
| Age | 0.0439*** | 0.0805** | 0.0520 |
| | (0.0084) | (0.0385) | (0.0493) |
| Age square | -0.0003*** | -0.0007*** | -0.0002 |
| | (0.0095) | (0.0002) | (0.0005) |
| Years of schooling | 0.0468*** | 0.0127 | -0.0021 |
| | (0.0073) | (0.0232) | (0.0281) |
| Number of children | 0.0695*** | 0.0520** | -0.0086 |
| | (0.0137) | (0.0247) | (0.0517) |
| Age of the youngest child | 0.0097*** | 0.0090* | -0.0069 |
| | (0.0032) | (0.0053) | (0.0130) |
| State unemployment rate | -0.0117 | -0.0657*** | -0.0549** |
| | (0.0117) | (0.0192) | (0.0228) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 5.2912*** | 5.8710*** | 5.7483*** |
| | (0.2221) | (1.0674) | (1.1990) |
| Ν | 7045 | 7045 | 7045 |
| R-squared | 0.136 | 0.081 | 0.032 |

Table 2.4: Estimates of the Impact of Child Support Receipt on Housing Expenditure.

| Variables | | |
|-------------------|--|-------------------|
| Instruments | | |
| | Divorce rate | 0.2082*** |
| | | (0.0685) |
| | Teenage birth rate | 0.0032 |
| | | (0.0061) |
| | Ratio of female-headed families | 4.1321 |
| | | (4.8936) |
| | State-level average income | 0.0001 |
| | | (0.0000) |
| | State-level average child support income | -0.0001 |
| | | (0.0000) |
| | TANF benefit for family of 3 | 0.0010** |
| | | (0.0004) |
| Control variables | | |
| | Log (Non-child support income) | -0.1377*** |
| | | (0.0182) |
| | Wealth | 0.0002* |
| | | (0.0000) |
| | Age | 0.2214*** |
| | | (0.0351) |
| | Age square | -0.0031*** |
| | | (0.0005) |
| | Years of schooling | 0.1697*** |
| | | (0.0256) |
| | Number of children | 0.1411*** |
| | | (0.0411) |
| | Age of the youngest child | 0.0562*** |
| | | (0.0095) |
| | State unemployment rate | -0.0756** |
| | | (0.0325) |
| N | | 5070 |
| | | 5979 2000 0042 |
| Log likelihood | | -2890.0843 |

Table 2.5: Probit Regression Predicting the Probability of Child Support Receipt.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1. Year indicators are also included, but not reported here.

| Variables | | |
|-------------------|---------------------------------------|------------|
| Instrument | | |
| | Fitted value of child support receipt | 0.2425*** |
| | | (0.0816) |
| Control variables | | |
| | Log (Non-child support income) | -0.0161*** |
| | | (0.0044) |
| | Wealth | 0.0003 |
| | | (0.0000) |
| | Age | 0.0151 |
| | | (0.0121) |
| | Age square | -0.0003*** |
| | | (0.0001) |
| | Years of schooling | 0.0018 |
| | | (0.0077) |
| | Number of children | 0.0280*** |
| | | (0.0081) |
| | Age of the youngest child | 0.0069*** |
| | | (0.0019) |
| | State unemployment rate | -0.0025 |
| | | (0.0062) |
| Ν | | 7045 |
| R-squared | | 0.0463 |

Table 2.6: First-stage Regression for Consumption Equations.

Notes: Standard errors in parentheses. F-statistic for the first stage regression = 10.60. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | OLS | FE | IV-FE |
|--------------------------------|-------------------------|-------------------------|-------------------------|
| Variables | Log (Total consumption) | Log (Total consumption) | Log (Total consumption) |
| | | | |
| Log (Child Support Income) | -0.0042 | -0.0074 | 0.5760 |
| | (0.0129) | (0.0191) | (0.4500) |
| Log (Non-child support Income) | 0.0764** | 0.0258 | 0.2761* |
| | (0.0347) | (0.0420) | (0.1460) |
| Wealth | 0.0020** | 0.0045* | 0.0620** |
| | (0.0010) | (0.0023) | (0.0277) |
| Age | 0.0972*** | -0.0516 | -0.1450 |
| | (0.0339) | (0.1310) | (0.1640) |
| Age Square | -0.0014*** | -0.0002 | 0.0012 |
| | (0.0004) | (0.0008) | (0.0014) |
| Years of Schooling | 0.1350*** | 0.0206 | -0.0784 |
| | (0.0268) | (0.0788) | (0.1010) |
| Number of Children | 0.0907** | 0.1140 | -0.1190 |
| | (0.0452) | (0.0842) | (0.1770) |
| Age of the Youngest Child | 0.0067 | 0.0264 | -0.0281 |
| | (0.0129) | (0.0183) | (0.0413) |
| State Unemployment Rate | -0.0090 | 0.0207 | 0.0144 |
| | (0.0395) | (0.0652) | (0.0786) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 2.4811*** | 7.407** | 7.2144* |
| | (0.7182) | (3.630) | (4.2640) |
| Ν | 7045 | 7045 | 5989 |
| R-squared | 0.021 | 0.011 | 0.003 |

Table 2.7: Estimates of the Impact of Child Support Income on Consumption.

| | OLS | FE | IV-FE |
|--------------------------------|---------------------------|---------------------------|---------------------------|
| Variables | Log (Food expenditure) | Log (Food expenditure) | Log (Food expenditure) |
| | | | |
| Log (Child Support Income) | 0.0121** | 0.0099 | 0.0200 |
| | (0.0051) | (0.0078) | (0.1701) |
| Log (Non-child support Income) | 0.1591*** | 0.0516*** | 0.0451 |
| | (0.0218) | (0.0171) | (0.0554) |
| Wealth | 0.0019*** | 0.0005 | 0.0056 |
| | (0.0003) | (0.0009) | (0.0105) |
| Age | 0.0071 | 0.1310** | 0.1310** |
| | (0.0123) | (0.0534) | (0.0619) |
| Age Square | 0.0047 | -0.0006* | 0.0003 |
| | (0.0001) | (0.0003) | (0.0005) |
| Years of Schooling | 0.0719*** | -0.0111 | -0.0208 |
| | (0.0105) | (0.0321) | (0.0383) |
| Number of Children | 0.0020 | 0.0377 | 0.0580 |
| | (0.0232) | (0.0343) | (0.0669) |
| Age of the Youngest Child | 0.0197*** | 0.0153** | 0.0198 |
| | (0.0051) | (0.0074) | (0.0156) |
| State Unemployment Rate | -0.0383** | -0.0351 | -0.0307 |
| | (0.0174) | (0.0266) | (0.0297) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 4.6482*** | 3.7290** | 3.5654** |
| | (0.3073) | (1.4784) | (1.6130) |
| Ν | 7045 | 7045 | 5989 |
| R-squared | 0.119 | 0.039 | 0.026 |

Table 2.8: Estimates of the Impact of Child Support Income on Food Expenditure.
| | OLS | FE | IV-FE |
|--------------------------------|------------------------------|------------------------------|------------------------------|
| Variables | Log (Consumption of housing) | Log (Consumption of housing) | Log (Consumption of housing) |
| | | | |
| Log (Child Support Income) | 0.0069* | -0.0017 | 0.0887 |
| | (0.0038) | (0.0056) | (0.1300) |
| Log (Non-child support Income) | 0.1210*** | 0.0659*** | 0.0843** |
| | (0.0158) | (0.0123) | (0.0424) |
| Wealth | 0.0012*** | 0.0087 | 0.0026 |
| | (0.0002) | (0.0006) | (0.0080) |
| Age | 0.0422*** | 0.0780** | 0.0918* |
| | (0.0083) | (0.0385) | (0.0473) |
| Age Square | -0.0003*** | -0.0007*** | -0.0006 |
| | (0.0000) | (0.0002) | (0.0004) |
| Years of Schooling | 0.0458*** | 0.0117 | 0.0124 |
| | (0.0073) | (0.0231) | (0.0293) |
| Number of Children | 0.0685*** | 0.0499** | 0.0306 |
| | (0.0136) | (0.0247) | (0.0511) |
| Age of the Youngest Child | 0.0093*** | 0.0089* | 0.0040 |
| | (0.0032) | (0.0053) | (0.0119) |
| State Unemployment Rate | -0.0110 | -0.0634*** | -0.0640*** |
| | (0.0117) | (0.0192) | (0.0227) |
| Indicators of years | Yes | Yes | Yes |
| Constant | 5.3433*** | 5.947*** | 5.1130*** |
| | (0.2210) | (1.067) | (1.2333) |
| Ν | 7045 | 7045 | 5989 |
| R-squared | 0.135 | 0.079 | 0.074 |

Table 2.9: Estimates of the Impact of Child Support Income on Consumption of Housing.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | | |
|-------------------|--|------------|
| Instruments | | |
| | Divorce rate | 0.1105 |
| | | (0.1702) |
| | Teenage birth rate | 0.0093 |
| | | (0.0140) |
| | Ratio of female-headed families | 35.0684 |
| | | (18.7070) |
| | State-level average income | 0.0044* |
| | | (0.0000) |
| | State-level average child support income | -0.0048 |
| | | (0.0000) |
| | TANF benefit for family of 3 | 0.0014** |
| | | (0.0006) |
| Control variables | | |
| | Log (Non-child support income) | -0.3011*** |
| | | (0.0251) |
| | Wealth | 0.0003* |
| | | (0.0000) |
| | Age | 0.1310 |
| | | (0.0982) |
| | Age square | -0.0024*** |
| | | (0.0006) |
| | Years of schooling | 0.0999* |
| | | (0.0589) |
| | Number of children | 0.3154*** |
| | | (0.0639) |
| | Age of the youngest child | 0.0782*** |
| | | (0.0137) |
| | State unemployment rate | 0.0003 |
| | | (0.0531) |
| Ν | | 5989 |
| Log likelihood | | 0.0391 |

Table 2.10: First-stage Regression Predicting Child Support Income for Consumption Equations.

Notes: Standard errors in parentheses. F-statistic for the first stage regression = 12.56. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

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CHAPTER 3

ESSAY II: CHILD SUPPORT RECEIPT AND SINGLE MOTHERS' LABOR SUPPLY

3.1 INTRODUCTION

The past few decades have witnessed remarkable changes in the structure of U.S. families. The number of families with non-traditional living arrangements, such as cohabiting partners and female-headed households, has increased dramatically. In particular, the incidence of single motherhood has increased by 41% between 1950 and 2010 among all racial groups (McLanahan & Jencks, 2015). This trend can be attributed to a surge in the prevalence of out-of-wedlock childbearing (Burdett & Ermisch, 2002). According to the statistics released by the U.S. Census Bureau for year 2014, roughly 50 percent of single mothers were never married, 57 percent of whom were women who lived below the official poverty threshold (U.S. Census Bureau, 2015). The economic challenges experienced by single mothers are further evidenced by the fact that, among those women who are poor, almost five out of ten were employed (U.S. Census Bureau, 2015).

Both stylized facts and academic literature reveal that female household heads are usually worse off in terms of their economic status compared to their married counterparts (McLanahan & Booth, 1989). Single mothers are often the sole breadwinner and caregiver for their households leading to a time allocation dilemma: they need to work and earn money while being required to spend time with their children. Furthermore, many single mothers were themselves raised in lowincome families and are characterized by low educational attainment. This implies that they can seldom rely on family safety net and their low levels of accumulated human capital translate into modest earning capabilities. Finally, given the single mothers' limited earnings potential, femaleheaded families often suffer from a severe lack of economic resources necessary to provide a dignified way of life for their children.

Government transfers have been an important source of unearned income for single mothers. Several types of public policies have been introduced to provide low-income femaleheaded families with additional economic resources. Examples of such programs include the Aid to Families with Dependent Children (AFDC), the Earned Income Tax Credit (EITC), the Supplemental Nutrition Assistance Program (formerly the Food Stamp Program), and the Child Support Enforcement (CSE) program. The CSE program is a collection of public regulations and bureaucracies designed to boost private financial transfers from non-resident fathers to single mothers. The program's objectives are achieved through establishment of the child support obligations and collecting the dues from the payee.

Given the single mothers' limited earning capabilities, the child support payment is an important potential source of unearned income. Economic theory predicts that an income transfer could constitute a disincentive to work for a single mother. However, the precise impacts of the policy depend on individual preferences and rules governing the transfer program. For instance, the complicated structure of the EITC leads to an array of ambiguous effects on the recipients' work incentives. In fact, the EITC employment effects vary across different household structures at various segments of the income distribution (Hotz, 2003). It has been argued that, unlike the EITC, the behavioral impacts of child support payment seem to be more definite and discourage participation in the labor market (Cuesta & Cancian, 2013). Thus, it is important to know whether the child support income increases the recipients' total income or merely substitutes for earned

income. If such a substitution effect is present and prevalent, it would constitute an unintended consequence of the child support policy and be at odds with the policy's statutory goal of enhancing the recipient child's economic well-being.

In this study, I explore the labor supply effects of child support transfer on single mothers with young children. Unlike previous studies that investigated employment motives associated with concurrent receipt of child support and welfare transfers, I only focus on child support recipients who are not participating in public cash transfer programs, particularly TANF program. In the majority of states, single mothers are not able to simultaneously receive TANF payment and child support transfer, because welfare-eligible mothers must transfer their rights to child support to the government. The government uses the collected child support to compensate the welfare costs and single mothers receive only the welfare payment. If the mother leaves the welfare program she is entitled to receiving the entire amount of child support. As a result, participation in the child support program would have a lesser effect on welfare-eligible single mothers. Moreover, the simultaneity of decision to work and receive welfare imposes an additional endogeneity problem, which complicates the identification of labor supply effects (Hu, 1995). Therefore, I hypothesize that single mothers who receive child support payment will decrease their supply of labor. This hypothesis requires an assumption that the non-labor (leisure) time is a normal economic good, which is true empirically (Gahvari, 1994).

3.2 CONCEPTUAL FRAMEWORK

A standard economic model of the leisure-labor tradeoff provides a simple framework that explains behavioral effects of child support transfer (increase in non-labor income) on single mothers' consumption, decision to work, and hours of work. According to this model, single mothers derive utility (U) from consumption of commodities produced by combining market goods C and non-market time L (leisure). The leisure time will be spent on household production (e.g., raising children) and other non-labor activities.

$$U = U(C, L) \tag{3.1}$$

Single mothers are restricted by an income constraint and a time constraint. Their income constraint contains two components: unearned income R and earned income. Assuming that they allocate their time (T) to either leisure or work (M) their budget and time constraints can be shown as:

$$R + WM = PC \tag{3.2}$$

$$T = L + M \tag{3.3}$$

where *W* is the wage rate and *P* represents prices of goods and services. Solving the first-order conditions of this model would result in the optimal levels of consumption of leisure (L^*) , market work (M^*) , and goods and services (C^*) , that maximize the satisfaction of a single mother subject to constraints. Assuming that the first and the second derivative of the utility function with respect to consumption are positive and negative, respectively, any increase in unearned income, such as the receipt of child support, will lead to a pure income effect. Such an effect would increase consumption of normal goods (i.e., both market consumption and leisure are assumed to be normal) and reduce hours of work. However, without specific assumptions about the functional form of the utility function, the model is not capable of explaining the relative size of the income effect on market consumption and leisure. If the preferences are sufficiently skewed towards

leisure, the substitution of leisure for work could be large and the income effects on consumption could be small.

3.3 LITERATURE REVIEW

The trends of increasing labor force participation of women, coupled with incentive structures created by tax systems and welfare programs targeting single mothers, have inspired many researchers to investigate the interactions between public policies and labor supply decisions of single mothers. A discernable example of such research strain comprises of studies focused on the effects of tax reforms introduced during the late 1980s and early 1990s. Using the March Supplement to the Current Population Survey, Eissa and Liebman (1996) study the impacts of the tax reform of 1986 on work decisions of both female heads of the household and unmarried women with no children. Their quasi-experimental analysis shows that the fiscal incentives encourage single mothers to increase hours of work. Ellwood (2000) employes a difference-in-difference method to evaluate the labor supply effects of the Earned Income Tax Credit (EITC) extension in early 1990s and discovers a similar positive effect of the tax reform. Meyer and Rosenbaum (2001) isolate the distinct impacts of tax and welfare reforms on labor supply incentives of affected individuals. After comparing single mothers to the single childless women, the authors find that the EITC was responsible for the majority (60 percent) of the increase in single mothers' labor force participation between 1984 and 1997.

Another group of studies explores the effect of in-kind transfers on female household heads' labor supply. The majority of these estimations control for possible impacts of cash transfers on labor market decisions. For example, Fraker and Moffitt (1988) examine the simultaneous impacts of the AFDC (Aid to Families with Dependent Child) and food stamp programs on labor supply of single mothers. They found that food stamp recipients, on average, worked one hour less than their counterparts who did not receive similar aid. Unlike previous research, Hoynes and Schanzenbach (2012) focus particularly on the effects of food stamp program on a sample of recipients extracted from several waves of the PSID. Utilizing a differencein-difference technique, they discover that food stamps receipt significantly reduces femaleheaded households' propensity to work, measured both at the extensive margin of labor supply decision and the intensive amount of the hours worked.

The relationship between child care subsidies and single mothers' labor supply decisions has also been studied more recently. In most cases, the receipt of these subsidies is strongly conditioned upon the employment of potential recipients. Some studies explored the child carelabor relationship using data collected before the welfare reform of 1996 (Berger & Black, 1992; Kimmel, 1996). Using a broad measure of child care subsidy, these papers find a positive relationship between the subsidies and recipients' labor supply. Other researchers examined the same relationship after the welfare reform and were able to identify a causal effect resulting from the policy change. Utilizing the instrumental variable approach in order to isolate exogenous treatment effect, Tekin (2005) estimate that the recipients of child care subsidies were more likely to work compared to non-recipients. Blua and Tekin (2007) analyze the determinants and consequences of changes in child care subsidy initiated by the welfare reforms of 1996. Their results suggest that the new subsidy encourages employment among single mothers and decreases the likelihood of dependence of female-headed families on welfare. Zanoni and Weinberger (2015) evaluate the effects of a publically-funded child care subsidy program implemented by the state of Illinois. Although the authors find evidence of a positive and significant effect of the

subsidy on labor outcomes of low-income mothers, they also indicate that these effects disappear in the long term.

Few empirical studies analyze the effects of child support policy on single mothers' labor market decision-making. Graham and Beller (1989) and Graham (1990) examine the labor outcomes of child support recipient families when separated or divorced mothers simultaneously applied for both child support and welfare (AFDC). Their findings indicated that welfare income reduces recipients' labor supply more than child support income. Hu (1994) evaluates the degree to which child support policies and alternative child support regimes encourage unmarried females' welfare participation and decision to work. He segregates child support recipients into groups of those who receive welfare and those who do not. He also separately estimates the labor supply effects of child support income on divorced vs. separated mothers. The empirical results imply that single mothers' labor supply and welfare participation are responsive to variation in child support payments. Cuesta and Cancian (2013) employ an experimental approach to study the effects of child support payment on the labor supply of custodial mothers who are also participating in Wisconsin's TANF program. They use the conditions of a natural experiment provided by the implementation of Wisconsin Child Support Demonstration Evaluation (CSDE) to estimate the causal effects of CSE systems on recipients' outcomes. Results are not consistent with findings of earlier studies that explored the interaction between single mothers' labor supply and child support receipt as they find no evidence of negative associations between the receipt of child support and custodial mothers' likelihood of working or hours worked.

3.4 METHODOLOGY

To study the impacts of child support policy on single mothers' market and non-market time allocation decisions I use data obtained from the interview years 1999 to 2013 of the Panel Study of Income Dynamics (PSID). The primary focus of the PSID is on demographic and income variables. In particular, it contains detailed information on family structure and income obtained from various sources including labor market participation. I only focus on unmarried, separated or divorced female household heads with children younger than 18 years of age, who were eligible for child support transfer between 1999 and 2013. All single mothers with deceased husbands and those who did not appeare in at least two consecutive waves of data are eliminated. My final sample comprises of 7,367 female-headed families.

The dependent variables represent three aspects of single mothers' labor supply. These variables are: (1) an indicator for being employed, (2) the earned income, and (3) the average number of hours worked. The latter is calculated by combining annual regular and overtime hours of work. The dichotomous indicator of employment enables me to examine the possible impacts of child support on custodial mothers' decision to work. On the other hand, by including the other two labor-related variables in my regression analysis, I can investigate the impacts of child support transfer on the amount of labor supplied. My key independent variables capture both the receipt of child support income and its amount. In particular, I estimate the following models using a two-step (2SLS) procedure:

$$Y_{it} = \gamma C_{ist} + \beta_1 X_{it} + \beta_2 Z_{st} + u_i + w_s + v_t + \varepsilon_{ist}$$
(3.4)

$$C_{it} = \varphi I_{st} + \delta_1 X_{it} + \delta_2 Z_{st} + \tau_{ist}$$

$$(3.5)$$

$$\Pr(C_{it} = 1) = \Psi[\varphi I_{st} + \delta_1 X_{it} + \delta_2 Z_{st}]$$
(3.6)

where C represents child support variables measured for family *i* residing in state s at time t, X and Z, respectively, are the vectors of individual and state-specific control variables. I employ the fixed effects instrumental variable approach to account for possible endogeneity of child support. The variable I in equation 3.5 is a vector of instruments. The individual (u), state (w) and time fixed (v)effects in my regressions control for unobserved and unmeasured differences between single mothers that remain constant over time. Ignoring these time-invariant unobserved factors could lead to a set of biased regression coefficients. Bias to regression estimates could also arise if the policy variables (the choice of participation in the program and the level of child support transfer) are correlated with the error term (ε). The unobserved factors that affect the single mothers' propensity to work could be correlated with child support variables. In the presence of endogenous regressors, the association identified by regression estimates may not be indicative of a causal relationship. On the other hand, a properly specified instrumental variables estimator reveals the direction and magnitude of the causal effect of child support variables. Utilizing a 2SLS procedure, I initially estimate equation 3.5 with instruments and other exogenous factors as explanatory variables and the policy variables as outcomes (first stage). The second stage regressions (3.4) are performed by substituting the observed child support variables with their fitted values obtained from the first stage.

Since my treatment variable (receipt of child support) is endogenous, a regular 2SLS model might cause a forbidden regression problem and produce inconsistent estimates. The forbidden regression issue arises when the first stage of a 2SLS model with a binary endogenous variable is estimated and predicted using a probit specification. One solution would be to predict the dichotomous outcome using OLS (linear probability model). This approach, however, does not

account for the nature of the dependent variable and could lead to nonsensical predictions (e.g., probability estimated at more than 100%). An alternative solution to this methodological obstacle recommended by Angrist and Pischke (2008) is to employ a modified version of 2SLS which includes one additional stage. As explained in more detail in the methodology section of the previous essay, a probit model is used to regress the dichotomous treatment variable on a full set of instruments and exogenous variables (equation 3.6). Then, the predicted treatment variable obtained from the probit regression is directly substituted into the first stage of the 2SLS model as an instrumental variable.

3.5 **RESULTS**

3.5.1 DISCRIPTIVE ANALYSIS

As demonstrated in Table 3.1, single mothers with child support constitute about the third of the sample. Descriptive statistics indicate that recipients earn a higher average income compared to their non-recipient counterparts. In addition, the average total income of recipients seems higher than the total income of those with no child support. The two subsamples seem to be distinguishable also in terms of other labor market characteristics. On average, the beneficiaries of child support work two additional hours per week and are more likely to be employed. Finally, the recipients appear to be older and have older children than non-recipients.

3.5.2 IMPACT OF CHILD SUPPORT RECEIPT ON LABOR SUPPLY

In this section, I present empirical findings on the impacts of child support transfer on single mothers' labor supply. The presentation of findings follows a template similar to the one utilized in the previous chapter, i.e., the results from instrumental variables fixed effects (IV-FE) model are presented alongside the estimates obtained from pooled data ordinary least squares (OLS) and fixed effects (FE) regressions.

Table 3.2 shows the results from regressions where the dependent variable is a natural logarithm of single mother's earnings. This outcome is regressed on a binary variable indicating the receipt of child support, as well as a set of control variables. The OLS estimate suggests a positive relationship between labor income and child support receipt. However, the statistical significance of this correlation is eliminated with the addition of individuals fixed effects to the model. The instrumental variable estimation that controls for individual fixed effects (IV-FE) reveals a sizable negative impact of child support receipt on earnings, a finding compatible with the hypothesized relationship.⁵ The sign and statistical significance of the IV-FE estimate suggests that ignoring the unobserved time-invariant factors and possible endogeneity problem could produce inaccurate and misleading results. My result indicates that, upon receipt of the child support transfer, the single mother's labor income decreases significantly both in statistical and quantitative terms. However, the magnitude of this effect should be interpreted with care. The large size of the estimated coefficient might be caused by transition out of labor force or the limited ability of utilized instruments to isolate variation in the outcome variable.

⁵ Results of the probit estimation of the likelihood of receiving child support as well as the first-stage regression results are reported in Tables 3.5 and 3.6.

The estimated coefficients on single mothers' unearned income (i.e., income from all sources other than earnings and child support) in all three models, as shown in Row 2, are statically significant. However, the OLS and FE estimates are positive, which contradicts the theoretical expectations. Indeed, once I added controls for time-invariant factors and utilized a two-stage procedure, the unearned income elasticity of earnings becomes negative. Thus, an increase in single mothers' unearned income appears to be negatively associated with their earnings. Finally, all demographic control variables show the expected signs. For instance, single mothers' labor income seems to be nonlinear in age and positively associated with the number of years of schooling.

In Table 3.3, I present the regression results of the log of weekly hours of work on the dichotomous variable of child support receipt and a variety of control variables. The estimates on the intensive margin of labor supply are 0.06 (OLS), -0.004 (FE), and -2.76 (IV-FE), among which the FE estimate is statistically insignificant. The IV-FE parameter estimate of the binary child support variable reveals that single mothers sharply reduce the number of hours worked on a weekly basis once they receive the child support transfer. This finding agrees with the estimated impact of child support receipt on single mothers' labor income. Holding all other factors constant, becoming a recipient of child support appears to encourage single mothers to work fewer hours (consume more non-labor time) and earn less labor income.

Although the non-labor income elasticities are statistically different from zero in all three models, only the IV-FE estimator produces a coefficient estimate with a negative sign. This result suggests that a one percentage point increase in unearned income available from sources other than child support decreases single mothers' hours worked per week by about 0.08 percent.

I repeated the same multivariate regression analyses to evaluate the effect of child support receipt on the extensive margin of labor supply (decision to work). Table 3.4 reports parameter estimates for three specifications in which the dependent variable, single mothers' labor market participation, is operationalized by a dichotomous indicator and regressed on the receipt of child support as well as individual and state level control variables. The estimates from these models can be conveniently interpreted as marginal effects of becoming a child support recipient on the probability of working. Coefficients on the variable of interest are listed in the first row. The pooled OLS result shows that receiving child support transfer increases the probability of working. Unlike the pooled OLS estimate, however, the FE and IV-FE estimates of the child support variable have a negative sign and are not statistically significant. This discrepancy in results suggests that the OLS estimate could be biased due to unmeasured differences among single mothers. Thus, the evidence of impact of the child support receipt on extensive margin of labor supply is quite limited. In other words, single mothers' labor force participation seems to be unaffected by a change in their child support receipt status. The second row of Table 3.4 contains the coefficients on unearned income variable. A positive effect is obtained using pooled OLS and FE regression models, while the preferred estimation (IV-FE) leads to a negative and statistically significant estimate. Therefore, consistent with my expectations, an increase in non-earned income lowers the probability of working.

3.5.3 IMPACT OF CHILD SUPPORT INCOME ON LABOR SUPPLY

Tables 3.7, 3.8, and 3.9 report the coefficients and standard errors from pooled OLS, fixed effects, and IV-fixed effect models where the labor outcomes of interest are regressed on the log

of child support income, a set of time-variant control variables and year indicators.⁶ As is shown in Table 3.7, the coefficient on child support income estimated by IV-FE reveals a sizable negative and statistically significant effect on single mothers' labor income. A one percent increase in child support reduces labor income by about 0.6 percent. Evaluated at sample means, this effect implies that an increase of child support amount received annually by \$517 (10% increase at the sample mean of \$5,168 among women who are recipients) reduces earnings by about \$1,225 (average labor income = \$18,474). This back-of-the-envelope calculation indicates that the size of reduction in earning is roughly twice as large as the gain in support income, indicating that single mothers could obtain supplemental income through sources not captured in the data. Alternatively, a fraction of the support from an absent father could be paid as an in-kind transfer (e.g., food, child clothing, etc.), which could help explain larger disincentive to labor supply or the lack of effect on consumption expenditures (described in the previous chapter). Expectedly, an increase in unearned income is found to decrease labor income. A one percent increase in the single mothers' reported income from all sources other than earnings and child support reduces their earned income by almost 0.2 percent. The results also reveal a positive (and non-linear) effect of age and education.

Table 3.8 contains regression results for single mothers' hours of labor supply equations. I present the results from regression of the natural logarithm of weekly hours worked for three identification strategies described earlier. Since the child support income is entered as a log-transformed variable, estimates can be interpreted as elasticities. All specifications control for a set of state and year dummies. I find a significant difference between the IV-FE estimate and elasticities obtained using the OLS and FE estimators, indicating the likely bias in using OLS and

⁶ Table 3.10 reports the first stage results for the instrumental variable regressions presented in Tables 3.7, 3.8, and 3.9.

FE. The IV-FE estimated child support income elasticity (-0.24), which is statistically significant, indicates that the more child support single mothers receive, the fewer hours they work. The second row of Table 3.8 presents unearned income elasticities of labor supply. Consistent with existing labor supply literature, the IV-FE generates negative and statistically significant unearned income elasticity.

Table 3.9 compares the effects of the amount of child support received on labor force participation estimated by pooled OLS, fixed effects, and instrumental variables fixed effect models. Single mothers' participation responses to variations in child support income are presented in the first row. Although the OLS estimate of the impact of child support income on single mothers' decision to work is statistically significant, the IV-FE estimate is plausibly more indicative of the true effect embedded in the data due to the fact that it is less likely to suffer from selection and omitted variable biases. This result reveals a negative effect on the likelihood of labor market participation. However, the coefficient is not significant statistically. Therefore, my estimations detect no convincing evidence that single mothers exit labor market in response to the increase in amount of child support income that they receive. Similarly to the previously presented results, my IV-FE estimate of the effect of unearned income on mothers' non-child support unearned income appears to be negatively associated with the probability of working.

3.6 CONCLUSION

Designing and implementing policies to address the economic challenges of low-income families requires elaborate procedures. Not only is the development process for new programs

complicated, but also policy outcomes could differ from what policymakers intend or expect. The diverse and complex nature of targeted groups could undermine the expected effectiveness of anti-poverty policies, and in some cases, it might lead to unintended consequences. Thus, the existing policies must be evaluated and adjusted in order to guarantee compliance with desirable objectives and optimize the efficacy.

In this essay, I examine the labor supply effects of CSE policy. The policy aims at supporting one of the most vulnerable groups in society – the single mothers. To comprehensively estimate the income effect of child support transfer on single mothers' labor supply decisions, I evaluated the responses of labor income, weekly hours worked, and the probability of labor market participation, to changes in child support receipt status or amount. My unique contribution to the literature lies in an attempt to identify the causal relationship using a modified version of instrumental variable approach. I demonstrate that the receipt of child support, as well as the increase in amount of transfer, result in a sharp decline in labor income and the number of hours worked. These findings support the results of previous studies.

The findings presented here, along with those from the first essay, point to the following narrative. Although the child support system was designed to enhance the economic well-being of single mothers, there is no credible evidence that this support boosts consumption of recipient families. Instead, the transfer appears to incentivize substitution of leisure for work, revealing that single mothers prefer time spent out of work to extra consumption that they would be able to finance if they maintained the labor supply at the pre-support level. It is outside the scope of the present analysis to identify the activities that mothers engage in during the time gained out of work and offer normative judgements, but it is plausible to assume that the behavior of mothers is not entirely inconsistent with policymakers' intentions. The quantity and quality of time spent with a

child could boost the non-economic aspects of family's wellbeing and contribute to the child's development. Thus, in the normative economic sense, the child support policy could lead to various desirable outcomes. At the same time, the results should be interpreted with some caution. Since mothers' time allocation decisions are not measured directly in the data, I cannot explicitly measure the increase in non-labor time, or how the mothers spend their time gains out of work. Similarly, I cannot evaluate the effects that these time allocation decisions have on the material well-being of children. Moreover, the PSID reports no information on absent fathers' non-pecuniary contributions, such as whether they spend time with their children. Such contributions could potentially impact single mothers' time allocation decisions.

| | All Women | Women with Child Support Income | Women without Child Support Income |
|---------------------------|-----------|------------------------------------|---------------------------------------|
| Variables | (N=7,367) | (N=2,480) | (N=4,871) |
| Income | \$28,564 | \$35,103 | \$23,840 |
| Labor Income | \$18,176 | \$18,474 | \$14,937 |
| Child Support Income | \$2,187 | \$5,168 | \$0 |
| Total Consumption | \$22,117 | \$24,916 | \$20,060 |
| Food Expenditure | \$4,237 | \$4,667 | \$3,919 |
| Housing Expenditure | \$7,101 | \$7,785 | \$6,578 |
| Wealth | \$6,914 | \$10,170 | \$4,448 |
| Weekly Hours of Work | 29.27 | 30.72 | 28.42 |
| Employed | 0.738 | 0.791 | 0.701 |
| Years of Schooling | 12.27 | 12.91 | 11.83 |
| Age | 36.29 | 37.39 | 35.59 |
| Number of Children | 1.86 | 1.80 | 1.92 |
| Age of the Youngest Child | 7.29 | 8.26 | 6.61 |

Table 3.1: Selected Descriptive Statistics

*All statistics are adjusted by sample weights to be representative of the population.

| | OLS | FE | IV-FE |
|---------------------------|--------------------|--------------------|--------------------|
| Variables | Log (Labor income) | Log (Labor income) | Log (Labor income) |
| | | | |
| Receipt of child support | 0.2546*** | 0.0482 | -6.109** |
| | (0.0817) | (0.1011) | (2.999) |
| Log (unearned income) | 1.1080*** | 0.8408*** | -0.1910*** |
| | (0.0345) | (0.0258) | (0.0349) |
| Age | 0.1424*** | 0.0712 | 0.2520** |
| | (0.0284) | (0.0858) | (0.1229) |
| Age square | -0.0028*** | -0.0025*** | -0.0039*** |
| | (0.0003) | (0.0005) | (0.0011) |
| Years of schooling | 0.2583*** | 0.0504 | 0.1381* |
| | (0.0214) | (0.0516) | (0.0722) |
| Number of children | -0.3558*** | -0.0822 | 0.0212 |
| | (0.0443) | (0.0551) | (0.1252) |
| Age of the youngest child | 0.0211** | 0.0406*** | 0.0754** |
| | -0.0107 | (0.0120) | (0.0325) |
| State unemployment rate | -0.0560* | -0.0541 | -0.0754 |
| | -0.0327 | (0.0427) | (0.0564) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -6.538*** | -0.1244 | 5.4740* |
| | (0.6030) | (2.3769) | (3.1110) |
| Ν | 7,039 | 7,039 | 7,039 |
| R-squared | 0.314 | 0.187 | 0.006 |

Table 3.2: Estimates of the Impact of Child Support Receipt on Labor Income.

| | OLS | FE | IV-FE |
|---------------------------|-------------------|-------------------|-------------------|
| Variables | Log (Weekly hours | Log (Weekly hours | Log (Weekly hours |
| v al laules | worked) | worked) | worked) |
| | | | |
| Receipt of child support | 0.0645** | -0.0046 | -2.7622** |
| | (0.0304) | (0.0373) | (1.3170) |
| Log (unearned income) | 0.4021*** | 0.2929*** | -0.0826*** |
| | (0.0140) | (0.0095) | (0.0150) |
| Age | 0.0678*** | 0.0396 | 0.1070** |
| | (0.0102) | (0.0317) | (0.0500) |
| Age square | -0.0011*** | -0.0009*** | -0.00156*** |
| | (0.0001) | (0.0002) | 0.0000 |
| Years of schooling | 0.0818*** | 0.0285 | 0.0668** |
| | (0.0080) | (0.0190) | (0.0300) |
| Number of children | -0.1374*** | -0.0320 | 0.0174 |
| | (0.0159) | (0.0203) | (0.0540) |
| Age of the youngest child | 0.0095** | 0.0159*** | 0.0301** |
| | (0.0039) | (0.0044) | (0.0130) |
| State unemployment rate | -0.0183 | -0.0215 | -0.0335 |
| | (0.0121) | (0.0158) | (0.0240) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -2.6575*** | -0.6000 | 1.6421 |
| | (0.2264) | (0.8775) | (1.2800) |
| Ν | 7,039 | 7,039 | 7,039 |
| R-squared | 0.299 | 0.168 | 0.008 |

Table 3.3: Estimates of the Impact of Child Support Receipt on Hours of Work.

| | OLS | FE | IV-FE |
|---------------------------|---------------|---------------|---------------|
| | Labor market | Labor market | Labor market |
| variables | participation | participation | participation |
| | | | |
| Receipt of child support | 0.0185** | -0.0055 | -0.00553 |
| | (0.0083) | (0.0108) | (0.0108) |
| Log (unearned income) | 0.0908*** | 0.0710*** | 0.0710*** |
| | (0.0032) | (0.0028) | (0.00276) |
| Age | 0.0074** | 0.00433 | 0.00433 |
| | (0.0029) | (0.0092) | (0.00917) |
| Age square | -0.0002*** | -0.0002*** | -0.000185*** |
| | (0.0000) | (0.0000) | (0.0000) |
| Years of schooling | 0.0183*** | 0.0018 | 0.00117 |
| | (0.0023) | (0.0055) | (0.00551) |
| Number of children | -0.0319*** | -0.0097* | -0.0097* |
| | (0.0047) | (0.0059) | (0.00589) |
| Age of the youngest child | 0.0012 | 0.0038*** | 0.00379*** |
| | (0.0010) | (0.0013) | (0.00128) |
| State unemployment rate | -0.0036 | -0.0035 | -0.00346 |
| | (0.0033) | (0.0046) | (0.00457) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -0.1949*** | 0.2322 | 0.2318 |
| | (0.0623) | (0.2541) | (0.254) |
| Ν | 7,039 | 7,039 | 7,039 |
| R-squared | 0.277 | 0.127 | 0.004 |

Table 3.4: Estimates of the Impact of Child Support Receipt on Labor Market Participation.

| 0.2023*** |
|------------|
| (0.0686) |
| 0.0030 |
| (0.0060) |
| 3.4652 |
| (4.9032) |
| 0.001 |
| (0.0000) |
| -0.001 |
| (0.0000) |
| 0.001** |
| (0.0004) |
| -0.0557*** |
| (0.0073) |
| 0.1964*** |
| (0.0348) |
| -0.0027*** |
| (0.0005) |
| 0.1445*** |
| (0.0249) |
| 0.1550*** |
| (0.0407) |
| 0.0532*** |
| (0.0095) |
| -0.0741** |
| (0.0324) |
| Yes |
| |
| 5979 |
| -2896.6996 |
| |

Table 3.5: Probit Estimates of Probability of Child Support Receipt.

Variables

-

 Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, **</td>

 p<0.05, * p<0.1.</td>

| Table 3.6: First-stage | Regression | Predicting | Probability | of Receipt for | Labor |
|------------------------|------------|------------|-------------|----------------|-------|
| Models. | | | | | |

Variables

| Instrument | | |
|---------------|---------------------------------------|------------|
| | Fitted value of child support receipt | 0.2494*** |
| | | (0.0827) |
| Control vari | ables | |
| | Log (Non-child support income) | -0.0077*** |
| | | (0.0017) |
| | Age | 0.0115 |
| | | (0.0121) |
| | Age square | -0.0002*** |
| | | (0.0001) |
| | Years of schooling | 0.0019 |
| | C C | (0.0075) |
| | Number of children | 0.0260*** |
| | | (0.0082) |
| | Age of the youngest child | 0.0063*** |
| | | (0.0019) |
| | State unemployment rate | -0.0012 |
| | | (0.0061) |
| Indicators of | f years | Yes |
| Ν | | 7,039 |
| R-squared | | 0.0421 |
| | | |

Notes: Standard errors in parentheses. F-statistics for the first-stage regression is 11.29. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | OLS | FE | IV-FE |
|----------------------------|--------------------|--------------------|--------------------|
| Variables | Log (Labor income) | Log (Labor income) | Log (Labor income) |
| | | | |
| Log (Child support income) | 0.0459*** | 0.0262** | -0.6631* |
| | (0.0102) | (0.0125) | (0.3602) |
| Log (Unearned income) | 1.1079*** | 0.843*** | -0.1965*** |
| | (0.0335) | (0.0257) | (0.0409) |
| Age | 0.1414*** | 0.0754 | 0.1934 |
| | (0.0284) | (0.0859) | (0.1180) |
| Age square | -0.0028*** | -0.00254*** | -0.0033*** |
| | (0.0003) | (0.000525) | (0.0010) |
| Years of schooling | 0.2542*** | 0.0508 | 0.2040*** |
| | (0.0213) | (0.0516) | (0.0752) |
| Number of children | -0.3553*** | -0.0837 | 0.0500 |
| | (0.0443) | (0.0551) | (0.1372) |
| Age of the youngest child | 0.0197* | 0.0389*** | 0.0710** |
| | (0.0107) | (0.0120) | (0.0309) |
| State unemployment rate | -0.0569* | -0.0613 | -0.0910 |
| | (0.0327) | (0.0427) | (0.0581) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -6.505*** | -0.278 | 5.5784* |
| | (0.603) | (2.378) | (3.1521) |
| Ν | 7,039 | 7,039 | 5989 |
| R-squared | 0.330 | 0.188 | 0.011 |

Table 3.7: Estimates of the Impact of Child Support Income on Labor Income.

| | OLS | FE | IV-FE |
|----------------------------|-------------------|-------------------|-------------------|
| Variables | Log (Weekly hours | Log (Weekly hours | Log (Weekly hours |
| variables | worked) | worked) | worked) |
| | | | |
| Log (Child Support Income) | 0.0138*** | 0.00709 | -0.2412* |
| | (0.0038) | (0.00463) | (0.1341) |
| Log (Unearned Income) | 0.4018*** | 0.293*** | -0.0790*** |
| | (0.0137) | (0.00949) | (0.0152) |
| Age | 0.0673*** | 0.0406 | 0.0862** |
| | (0.0102) | (0.0317) | (0.0438) |
| Age Square | -0.0012*** | -0.000900*** | -0.0012*** |
| | (0.0001) | (0.000194) | (0.000367) |
| Years of Schooling | 0.0803*** | 0.0287 | 0.0797*** |
| | (0.0080) | (0.0190) | (0.0280) |
| Number of Children | -0.1374*** | -0.0324 | 0.0075 |
| | (0.0159) | (0.0204) | (0.0511) |
| Age of the Youngest Child | 0.0089** | 0.0154*** | 0.0255** |
| | (0.0039) | (0.00443) | (0.0115) |
| State Unemployment Rate | -0.0184 | -0.0237 | -0.0352 |
| | (0.0121) | (0.0158) | (0.0217) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -2.6402*** | -0.648 | 1.5501 |
| | (0.2252) | (0.8783) | (1.1740) |
| Ν | 7,039 | 7,039 | 5989 |
| R-squared | 0.315 | 0.169 | 0.017 |

Table 3.8: Estimates of the Impact of Child Support Income on Hours of Work.

| | OLS | FE | IV-FE |
|----------------------------|---------------|---------------|---------------|
| Variables | Labor market | Labor market | Labor market |
| variables | participation | participation | participation |
| | | | |
| Log (Child support income) | 0.0036*** | 0.00105 | -0.0403 |
| | (0.0010) | (0.00134) | (0.0431) |
| Log (Unearned income) | 0.0910*** | 0.0712*** | -0.0142*** |
| | (0.0031) | (0.00275) | (0.0049) |
| Age | 0.0074** | 0.00489 | 0.0391*** |
| | (0.0029) | (0.00919) | (0.0141) |
| Age square | -0.0002*** | -0.000189*** | -0.0004*** |
| | (0.0000) | (5.62e-05) | (0.0001) |
| Years of schooling | 0.0180*** | 0.00137 | 0.0178** |
| | (0.0023) | (0.00552) | (0.0090) |
| Number of children | -0.0318*** | -0.00962 | 0.0067 |
| | (0.0047) | (0.00590) | (0.0164) |
| Age of the youngest child | 0.0011 | 0.00365*** | 0.0062* |
| | (0.0011) | (0.00128) | (0.0037) |
| State unemployment rate | -0.0037 | -0.00426 | -0.0039 |
| | (0.0033) | (0.00457) | (0.0070) |
| Indicators of years | Yes | Yes | Yes |
| Constant | -0.195*** | 0.212 | -0.0978 |
| | (0.06211) | (0.2540) | (0.3782) |
| Ν | 7,039 | 7,039 | 5989 |
| R-squared | 0.237 | 0.128 | 0.005 |

Table 3.9: Estimates of the Impact of Child Support Income on Labor Market Participation.

| Variables | | |
|---------------------|--|------------|
| Instruments | | |
| | Divorce rate | 0.0580 |
| | | (0.1711) |
| | Teenage birth rate | 0.0122 |
| | | (0.0141) |
| | Ratio of female-headed families | 33.3457* |
| | | (18.8144) |
| | State-level average income | 0.0040 |
| | | (0.0000) |
| | State-level average child support income | -0.0050 |
| | | (0.0000) |
| | TANF benefit for family of 3 | 0.0013** |
| | | (0.0007) |
| Control variables | | |
| | Log (Non-child support income) | -0.1069*** |
| | | (0.0111) |
| | Age | 0.0715 |
| | | (0.0987) |
| | Age square | -0.0019*** |
| | | (0.0006) |
| | Years of schooling | 0.0873 |
| | | (0.0593) |
| | Number of children | 0.3141*** |
| | | (0.0643) |
| | Age of the youngest child | 0.0726*** |
| | | (0.0138) |
| | State unemployment rate | 0.0098 |
| | | (0.0534) |
| Indicators of years | | Yes |
| | | |
| Ν | | 5989 |
| Log likelihood | | 0.0274 |

Table 3.10: First-stage Regression Predicting Child Support Income for Labor Models.

Notes: Standard errors in parentheses. F-statistics for the first-stage regression is 10.39. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

3.7 **R**EFERENCES

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CHAPTER 4

ESSAY III: CHILD SUPPORT RECEIPT AND CHILDREN'S ACHIEVEMNTS

4.1 INTRODUCTION

Family plays a major role in shaping a child's educational attainment and adulthood achievements. The innate abilities inherited through genetic endowments, as well as the early-life material and economic resources, are considered to be among the important determinants of adulthood achievements. Through investment of economic resources in their children, parents can influence the likelihood of adulthood success of their offspring. The heterogeneity in individual endowments and childhood resources explains the discrepancies among children regarding their human capital accumulation. Children of parents with high levels of human and material capital are more likely to become economically successful (Becker & Tomes, 1997). Previous studies document that the shortage of economic resources affects a child's skill development and achievements during both childhood and adulthood (Haveman & Wolfe, 1995).

Stylized facts suggest that children growing up in female-headed families do not have access to the comparable economic resources relative to children raised by two-parent families. Recent socioeconomic statistics released by the U.S Census Bureau show that about 40 percent of single mothers were below the official poverty level in 2014 (Current Population Reports, 2016). Poverty is a frequent outcome when a single mother is the sole breadwinner for her family and her work duties interfere with parenting responsibilities. In sum, children raised by single mothers are more likely to be deprived of resources necessary for their physical and psychological development. A number of studies examine the deficiencies in human capital accumulation associated with single motherhood. The majority of these studies document a negative association between childhood poverty and children's educational attainment (e.g., Krein & Beller, 1988; Astone & McLanahan, 1991; Ladd, 2012).

No manipulation of the innate capability endowments is feasible with the end goal of reducing the interpersonal inequality in the likelihood of being successful in life. However, there are some public policy interventions that affect the custodial mothers' economic resources. Literature suggests that policies that provide supplementary income for disadvantaged families play a significant role in attenuating adverse human capital consequences of childhood poverty (Knox, 1996). The anti-poverty transfers that target low-income single mothers could generate favorable impacts on recipient children's quality of life and attainments. Several such anti-poverty interventions have been introduced, e.g., cash transfers such as the Temporary Assistance for Needy Families (TANF), tax expenditures such as the Earned Income Tax Credit (EITC), or inkind transfers such as the Food Stamp Program (SNAP). Moreover, the federal government enacted the CSE program – a set of regulations and associated bureaucracy that attempt to elicit financial contributions from absent fathers to their children. From a conceptual point of view, a child support payment is similar to a public transfer that expands the recipient family's economic resources. However, due to the differences in eligibility criteria between public transfers and child support, as well as the potential interactions between the forms of aid and dual-eligibility restrictions, it is important to understand how the receipt of different forms of aid income affects single mother families and their children.

Literature argues that the child support transfer enhances early childhood skills and development, and thus partially remedies the problem of resources inadequacy among children growing up in one-parent families (Argys, Peters, Brooks-Gunn, & Smith, 1998; Nepomnyaschy, Magnuson, & Berger, 2012). This leads to a common sense presumption that a child support transfer produces long-lasting effects on the recipient as measured by adulthood achievements. However, the literature offers no convincing analysis or evidence on the enduring effects of non-custodial fathers' financial contributions on the recipients' future success and well-being. In this essay, I attempt to fill this void using data extracted from the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97). In particular, I extend the literature by identifying and measuring the lasting effects of child support transfer on educational achievements, labor market outcomes, and socioeconomic status in the early adulthood.

4.2 LITERATURE REVIEW

A large body of empirical literature describes a relationship between family income and child's achievements. Some researchers identify the impacts of poverty on early childhood attainment, while others focus on the early adulthood outcomes (Duncan et al., 1998; Duncan & Brooks-Gunn, 2000). The diversity of data sets and analytical approaches utilized in these analyses lead to a wealth of findings (Dahl & Lochner, 2005). Using a longitudinal sample of individuals from the Panel Study of Income Dynamics (PSID), Duncan et al. (1998) examines the correlation between childhood poverty and various measures of achievements including educational attainment and the probability of non-marital birth. To eliminate any omitted variable bias caused by time-invariant factors, they estimate parameters of a change model (i.e., "within" variation model) in which achievements are traced to income variations. The authors find that children who grow up in low-income families are less likely to complete high school and more likely to

experience out-of-wedlock fertility during early adulthood. Their empirical results also suggest that unfavorable educational effects of early childhood poverty are stronger than the negative impacts of middle childhood poverty.

In a similar study, Duncan, Ziol-Guest, and Kalil (2010) investigate the possible causal effect of early childhood poverty on several adult outcomes, such as labor market success, the probability of receiving welfare, and health status. Their analytical sample is drawn from the respondents to the PSID born between 1968 and 1975. They utilize three different regression models (OLS, Tobit, and logistic regression) to document a strong positive relationship between parental income in childhood and earnings and hours of work in adulthood.

Dahl and Lochner (2005) explore the role of economic deprivation in early childhood and its impacts on math and reading scores of children. The authors merge data from the NLSY samples of mothers and children, and use a fixed effects instrumental variable method to capture the causal effects of economic deprivation on the outcomes of interest. Their results reveal that the higher the current income, the higher the math and reading test scores. They also conclude that the past family income could affect children's current cognitive abilities.

Past research also documents the effect of living in a female-headed family on children attainments. Krein and Beller (1988) investigate the human capital outcomes of living with a single parent (i.e., single mother). They construct a single parent-child sample from the NLSY data and examine the educational attainment of children. According to their empirical results, the length of time when a child lives with a single parent is negatively associated with educational outcomes. The long-term consequences of growing up with single mothers are also explored by Biblarz and Gottainer (2000), who conduct their statistical comparison using pooled cross-sectional data drawn from the General Social Survey. Biblarz and Gottainer (2000) discover that children who lived

with a divorced mother are worse off in terms of their adult achievements compared to those who grew up in two-parent families. They also state that single parenthood caused by divorce generate a stronger negative impact on children's success than widowhood. Altogether, the evidence from past research on the relationship between economic hardship and a child's well-being suggests that welfare programs, by providing additional sources of income, alleviate some adverse consequences of severe childhood poverty (Duncan & Brooks-Gunn, 2000).

A separate group of studies focuses on the role of private transfers, including child support payments for mothers and their children. Similar to the studies of the effects of public welfare programs, these studies also attempt to evaluate the impacts of child support on various aspects of child's achievements. In particular, several studies conducted in 1990s found positive correlations between child support transfers and childhood outcomes, such as cognitive development and school performance (Baydar & Brooks-Gunn, 1994; Knox & Bane, 1994; McLanahan, Seltzer, Hanson, & Thomson, 1994). For instance, Knox (1996) uses the mother-child data from the NLSY to examine the impacts of child support payments on the level of cognitive stimulation at home and reading and math scores of young children. Her study utilizes an instrumental variable estimation strategy to account for the unobserved recipients' heterogeneity and finds that the child support income received by custodial mothers improves their children's test scores and creates a better environment for the cognitive development.

In the more recent research conducted by Nepomnyaschy, Magnuson, and Berger (2012) the impacts of formal and informal child support payments on child's well-being and development outcomes are studied separately. Unlike the majority of the literature that analyses cross-sectional data, the authors use a panel data set obtained from the Fragile Families and Child Well-being Study to identify the impacts of absent fathers' formal (court-ordered) and informal financial

contributions on the recipients' cognitive outcomes. Results from the stepwise regression analysis suggest that informal child support exert a larger effect on children's cognitive outcomes than the formal support.

4.3 METHODOLOGY

4.3.1 DATA AND SAMPLE

Investigating the lasting impacts of child support transfers requires a data set with several features. First, the data must include individual-level information on the receipt of child support transfers and outcomes of interest, as well as the adequate socio-economic and demographic information necessary to construct the key control variables. Second, the data must be longitudinal and provide measurements of the key variables during the child support recipient's childhood and adulthood. Finally, the information regarding child support should acknowledge both the receipt and the amount of transfer.

The data collected for the 1997 cohort of NLSY has all these features and thus constitutes an ideal data set for this study. The NLSY is a longitudinal study of the nationally representative sample of individuals who were between 12 and 16 years old in 1996. My analysis sample is restricted to individuals who received child support payment up to the age of 18 or were potentially eligible for child support (i.e., were living in a single-mother household and their father was alive). I follow this cohort of children until they reach age 24-28 when I obtain the measurements of the key dependent variables (measures of early adulthood achievement).

4.3.2 VARIABLES

I examine the impact of child support payment on various types of outcomes, each representing a unique aspect of an individual's success. The first set of dependent variables represents human capital accumulation outcomes, including educational attainment and high school performance. The level of education is measured by two binary indicators of high school and college completion, respectively. Recipients' annual credit-weighted GPA (or cumulative percentage of requirements fulfilled in each academic year) captures their high school performance. The second set of dependent variables represents young adults' employment and economic well-being. A dichotomous variable, separating employed individuals from unemployed ones, measures the adulthood employment status. Another achievement outcome, which will be measured by the poverty ratio, captures the young adults' economic well-being. This ratio divides total family income by the official poverty threshold after adjusting for household size.

The measures of educational attainment are time-invariant once an individual has finished schooling. Therefore, a cross-sectional regression analysis would be an appropriate identification strategy. I apply the same analytical approach to investigate the impact of child support receipt on employment variables and adulthood poverty status because these dependent variables and the majority of my explanatory variables are not contemporaneous. However, a multivariate panel data analysis will be used to explore the relationship between child support and high school educational performance. Unlike the cross-sectional dependent variables, an individual's high school performance measures are available for every year of school attendance. Given the panel nature of this information, estimations with individual fixed effects promise a more accurate assessment of the effect of child support.

The key independent variables (whether the child support was received and the actual amount of payment) and most of the control variables are obtained from the first wave of the NLSY97. The actual amount of child support received reported in the data allows me to create the main independent variable which is a binary indicator of child support receipt. Information on the receipt of child support was collected for only eight waves, because after the 8th wave the child support orders would have expired for most participants.

My econometric model includes three categories of control variables: individual-level and county-level variables. Individual level variables control for any possible impacts of parents and children characteristics. Family background and parents' socioeconomic status were shown to be strongly correlated with children's adulthood outcomes. Fortunately, the retrospective information about individuals' family background is requested in survey interviews and included in both child and parent's records of the NLSY97. I use mothers' educational attainment and income to capture the effects of family background on the long-term educational and well-being outcomes. In addition to single-mothers' SES, the respondents' childhood health status and cognitive ability also play a significant role in shaping adolescence and adult outcomes. In the first round of the NLSY97, the respondents' general state of health was measured through a subjective report in which each respondent evaluated her/his health state in categories ranging from excellent to poor. This self-reported variable is included to control for adolescence health status. Another important control variable represents childhood cognitive ability or development. This characteristic is measured by the respondents' ASVAB percentile score created by the NLS staff. This measure is recorded using the results of a computer-adaptive study called Armed Serviced Vocational Aptitude Battery (ASVAB) conducted by the NLS staff in which the majority of NLSY respondents participated. The ASVAB included several series of topical questions designed to

evaluate the respondents' cognitive skills and knowledge. Adjusting for sample weights, the NLS staff combined the percentile scores of mathematical and verbal tests to generate the AVSAB percentile score. Finally, the estimation of the effect of child support should take into account the role of economic climate. To this end, I control for the county unemployment rate and state fixed effects that are supposed to proxy for variation in economic environment during the respondents' childhood.

4.3.3 EMPIRICAL MODEL

The primary purpose of this study is to identify and measure the possible causal association between child support receipt and the recipient's achievements. A key challenge in identifying this causal relationship is a problem of self-selection. This problem occurs when people self-select to be treated by a program. The self-selection could be based on observed characteristics of individuals, a problem which is usually solvable by including the vector of control variables in regression analysis. However, sometimes the self-selection problem can be generated by unobserved traits and variables (e.g., personality traits, preferences, rate of time discounting, etc.). These unobserved or unmeasured characteristics could be correlated with the actual outcomes and lead to an endogeneity issue. For instance, single mothers who pursue child support order might also be the ones who tend to invest more in their children's human capital. From a methodological point of view, the presence of unobserved variables will lead to selection bias. My primary strategy to obtain the unbiased estimates and isolate the causal effect is an instrumental variable approach, which is specified by a two-step regression model. First, I estimate the following model using the OLS procedure:

$$C_i = \varphi I_{cs} + \delta_1 X_i + \delta_2 Z_{sc} + \tau_{ics} \tag{4.1}$$

where *C* represents child support variables measured for female-headed family *i* residing in county c and state s, *I* represents a vector of instruments, *X* is a vector of individual-level control variables, and *Z* contains state and county-level control variables. The vector of instrumental variables includes two variables that capture the administrative strength of state CSE programs. The first instrument measures state-level expenditures on non-welfare child support cases in the respondents' state of residence. The second instrumental variable represents total amount of child support collected for non-welfare child support recipients. In the next step, to identify the impacts of child support receipt and payment on recipients' achievements, the values of *C* fitted in equation (1) are used to estimate the following model:

$$Y_i = \gamma C_i + \beta_1 X_i + \beta_2 Z_{sc} + \varepsilon_{ics}$$

$$\tag{4.2}$$

where *Y* represents the measures of individual's achievements, such as educational attainments and employment.

4.4 **R**ESULTS

4.4.1 SUMMARY STATISTICS

Table 4.1 summarizes the key sample characteristics by providing the weighted means of relevant variables used in the empirical analysis. The sampled individuals earn an average of \$28,672 in labor income as adults, while the average difference between earnings of child support recipients and non-recipients is almost \$1,400. In addition, a higher average ratio of income to poverty line of child support recipients seems to imply that they are economically better off

compared to their non-recipient counterparts. The average income of a recipient single mother in 1997 exceeded income of an average income of a non-recipient mother by roughly \$4,300, which is almost equal to the sample average child support (\$4,124.72). In terms of cognitive abilities, children who received child support, on average, obtained higher scores than children without a child support transfer. As seen in Table 1, a smaller percentage of individuals who received child support experience unemployment. Comparing the welfare participation of two subsamples leads to the nearly identical conclusion. Furthermore, while 48 percent of individuals in both groups have high school diploma, a larger portion of recipients finished college. Finally, 27 percent of non-recipients are Black, while Black individuals constitute only 15 percent of recipients.

4.4.2 RESULTS

To assess the differences between recipients and non-recipients in terms of their future achievements, I regress children's measures of success on the indicator of child support receipt and a set of control variables using two estimation strategies: the ordinary least squares (OLS) and a modified version of the two-stage least squares (2SLS) procedures. Two binary indicators of educational success, two labor market outcomes, and two economic well-being variables represent the measures future success of recipients, while my control variables include demographic and socio-economic characteristics. As explained in the previous section, the modified 2SLS model begins with a probit estimation conducted in order to predict the likelihood of receipt using all instrumental and exogenous variables. The selected coefficients from probit estimation for the educational performance equations are listed in Table 4.3. The coefficients on both instruments (state non-welfare child support expenditures and collections) are statically

different from zero, which attests to their relevancy. I use the fitted value obtained from this probit estimation as an instrument in the first stage of my two-stage regression. This procedure allows me to the isolate the exogenous variation in child support receipt while avoiding the "forbidden regression" problem. All standard errors of regression coefficients are clustered at the state level to correct for possible heteroscedasticity. Table 4.4 reports the results from the first stage as well as the overall F-statistic for this stage (29.82). The magnitude of this statistics is indicative of the strength of instrumental variables, with values above 10 indicating acceptably strong instruments.

I summarized the OLS and IV estimates of child support receipt on children's educational achievements in Table 4.2. The second and fourth columns, respectively, present the results of IV analyses of high school and college graduation equations. The coefficient on the indicator of child support receipt in the high school diploma equation is positive, while the same coefficient from the OLS equation has a negative sign and is statistically insignificant. Assuming that my instruments successfully isolate the exogenous variation in receipt of child support, the differences in sign, magnitude, and statistical significance between coefficient obtained from OLS and IV estimations suggest that the 2SLS estimation removed the bias present in the OLS estimates. Although the IV estimate is only statistically significant at the ten percent significance level, it implies that, compared to eligible non-recipients, beneficiaries of child support are more likely to finish high school. Quantitatively, the likelihood of finishing high school seems to be higher by 33 percent among recipients of child support. An unexpected finding is the sign of the coefficient on children's cognitive ability index, which appears to be negatively correlated with high school completion. This unusual finding could be generated by the chronological structure of information collected on high school completion and cognitive abilities. As explained above, the cognitive ability index consists of several scores recorded by administrating various cognitive tests in 1999.

By this time, some older NLSY97 respondents might have already graduated from high school. Thus, they could be cognitively more developed compared to their younger counterparts. From a technical perspective, this discrepancy could be a manifestation of an endogeneity problem or a feedback effect between completing high school and the measure of cognitive ability. Endogeneity of cognitive index, if present, could lead to an unexpected sign and size of the estimate.

The fourth column in Table 4.2 reports the similar IV estimation results for the probability of receiving a bachelor's degree. The estimates provide no evidence of a significant difference between child support recipients and non-recipients in terms of the likelihood of completing their undergraduate studies. In other words, holding all other factors constant, receiving a child support transfer as a child does not seem to affect the recipients' chance of academic success. However, the coefficient on mothers' years of schooling is positive and statistically different from zero. This finding bolsters the narrative that being raised by a relatively well-educated single mother could enhance the academic accomplishment of the child. In addition, children's success in attaining higher education appears to be positively correlated with their cognitive skills, which is compatible with theoretical expectation.

To evaluate the extent to which receiving child support affects recipients' adulthood labor market success, I regress children's labor outcomes on the indicator of receipt and various control variables. Since my key dependent variable is an endogenous binary variable, I utilize the same modified two-stage least-square procedure that I used for estimating models of education. Table 4.6 reports coefficients from the first-stage estimation. The coefficient estimates on the instrument and F-statistics suggest that exogenous instrument is a strong predictor of endogenous binary variable and the two-stage procedure would produce reliable estimates.

Table 4.5 shows that child support recipients and non-recipients appear to be indistinguishable in terms of their early adulthood labor market performance. The coefficients on child support receipt from both the OLS and IV estimations of unemployment equation are not statistically different from zero. Thus, receiving child support as a child does not appear to have a noticeable impact on the probability of being unemployed as an adult. The third and fourth columns in Table 4.5 contain results of estimations where the dependent variable is the natural logarithm of earnings in early adulthood. The OLS estimation reveals a statistically significant and negative coefficient on child support receipt. The coefficient estimate is also negative in the IV estimation, but a large standard error rules out its statistical significance. The educational attainment, respondents' work experience, and the welfare receipt status are all likely to determine labor market behavior and success. Thus, in addition to the background covariates included in the previous models, I also included the measures of these respondent characteristics. These variables are measured by dichotomous indicators for completed levels of education, the total number of weeks during which the respondent has been employed since early adulthood, and a binary indicator of welfare (e.g. TANF, SNAP) receipt. The IV estimates of labor outcomes reveal that experienced individuals are less likely to be unemployed and generate more earnings. Welfare recipients are more likely to be unemployed and earn less labor income. Moreover, the results indicate that female respondents differ significantly from males in terms of their labor market achievements. They are less likely to be unemployed but earn less income than males.

In the next step, I examine the impact of childhood child support receipt on respondents' poverty ratio and the probability of receiving welfare during early adulthood. Findings from the OLS and IV estimations analogous to the previously estimated models are summarized in Table 4.8. To control for a permanent aspect of recipients' income, I added the average annual income

to my original set of control variables. Regardless of which estimation method is used, the results suggest that individuals' poverty status, as well as the probability of receiving welfare, do not differ by child support receipt. The signs of estimated coefficients in the IV model suggest that childhood receipt of support increases the poverty ratio and reduces the likelihood of welfare reliance. However, the large standard errors for both estimates imply that these findings cannot be generalized to the population. In other words, my estimations provide no evidence that the future well-being of children is causally determined by whether they received child support during childhood. Therefore, there is no evidence to support a notion of intergenerational transfer of dependency on welfare among child support recipients. Consistently with expectation, individuals with higher permanent income enjoy a higher current income to poverty threshold ratio and are less likely to participate in welfare programs. Finally, both the OLS and IV estimates indicate that the likelihood of receiving welfare transfers is higher among females.

In the next step, I repeat all my analyses but this time I substitute the child support dummy with a continuous log-transformed measure of child support payment received by the child's family (coded as zero for families that received no child support). This substitution allows me to evaluate the marginal effect of a one dollar increase in child support transfer on the outcomes of interest. As previously, I estimate both the OLS and 2SLS models to cope with the endogeneity of child support. However, since the amount of child support received is a continuous variable, I perform regular 2SLS analyses as the problem of "forbidden regression" no longer arises. Table 4.12 illustrates the first-stage results predicting the amount of child support payment to be included in the educational achievements models. As shown, statistically significant coefficients on both instruments and the high value of F-statistics imply that the instruments have sufficient strength. The main findings presented in Table 4.11 indicate that, when family background variables are

controlled and endogeneity bias is corrected, a one-dollar increment in child support income has only a negligible effect on the likelihood of completing high school or the probability of obtaining a bachelor's degree. Somewhat surprisingly, single mothers' non-child support income also has no independent impact on the outcomes of interest. The probability of college completion differs by gender and race. Females and African-Americans appear to be more successful in obtaining their bachelor degrees compared to males and white individuals, respectively.

Table 4.13 reports the OLS and IV estimates of labor supply models with the natural logarithm of child support income as the key independent variable. Like previous models, neither of the coefficients on child support payment demonstrates a significant relationship between the amount received and the measures of labor market success. Results suggest that the future labor market performance of recipients is not affected by variation in child support payment received during their childhood. Individual work experience is related negatively to the likelihood of being unemployed and positively to labor income. For every additional week of work experience, respondents' annual earnings increase by an average of 0.2 percent. Furthermore, females seem to be less likely to be unemployed compared to males.

In the final step, I perform the OLS and IV regression analyses with economic well-being outcomes as dependent variables. In line with previous results, I discovered no significant impact of marginal increases in child support on economic well-being. The coefficients on child support income from both IV poverty and welfare estimations are statistically insignificant. Therefore, the variation in child support income among recipients seems to have negligible long-term impact on their adulthood well-being. Expectedly, the correlation between respondent's long-term income and welfare receipt is negative. Moreover, there appears to be a gender gap in terms in terms of economic hardship. The income to poverty line ratio is lower for females than males, and females are more likely to be recipients of at least one government transfer program.

4.5 CONCLUSION

A growing body of literature emphasizes the critical role of early-life interventions on the well-being of disadvantaged children. However, little is known about the long-term impacts of such intervention on the subsequent quality of life of beneficiaries. In this essay, I attempt to shed some light on this question. Using data from the National Longitudinal Study of Youth, I test for the possible long-term effects of child support transfer received childhood and early adolescence on various indicator of early adulthood economic well-being. More specifically, I focus of the lasting impacts of child support on educational achievements, future earnings potential and labor market success, and other measures of economic well-being.

Using an instrumental variables method, I document a positive effect of child support on the likelihood of obtaining high school diploma. However, my empirical analysis indicates no long-term impact on other outcomes such as the probability of completing a college degree and labor market success. My findings imply that the benefits of child support transfer disappear as children grow older and enter adulthood. The absence of any long-term impact could be partially explained by my findings of the previous chapters. As I have shown in chapters two and three, the impacts of child support transfer on recipients' material well-being is insignificant. In fact, the child support payment might not be generous enough to influence recipients' well-being in a desirable way, which is essential for producing any lasting influences. Moreover, although the child support appears to generate a shift in favor of the consumption of leisure time, it might not necessarily increase single mother's time-intensive home activities essential to children's development and future success. Finally, I may hardly discover a long-term impact partly due to the automatic termination of child support order once the child reaches a certain age at which she/he is no longer considered a minor. This means that it might be beneficial to extend the duration of order so that the population of interest receives the payment over the stage of young adulthood. Such adjustment could provide recipients with additional resources and thus enhance their chance of success at a higher education level, which has been found as a strong predictor of individuals' adulthood achievements.

| | Total sample | Children without child support | Children with child support |
|------------------------------|--------------|--------------------------------|-----------------------------|
| Variable | (N=1787) | (N=1169) | (N=618) |
| Labor income in 2009 | \$28,673 | \$28,103 | \$29,520 |
| Mothers' income in 1997 | \$22,283 | \$20,625 | \$24,928 |
| Child support income in 1997 | \$1,628 | 0.00 | \$4,125 |
| Poverty ratio in 2009 | 344.72 | 328.69 | 369.41 |
| Cognitive ability index | 41882.38 | 37513.97 | 49149.05 |
| Unemployed in 2009 | 0.16 | 0.18 | 0.14 |
| Welfare status in 2009 | 0.17 | 0.19 | 0.14 |
| High School diploma | 0.48 | 0.48 | 0.48 |
| College Degree | 0.23 | 0.19 | 0.28 |
| Graduate Degree | 0.10 | 0.10 | 0.11 |
| Male | 0.54 | 0.55 | 0.52 |
| Female | 0.46 | 0.45 | 0.48 |
| Black | 0.22 | 0.27 | 0.15 |
| Hispanic | 0.13 | 0.16 | 0.14 |
| White and other races | 0.65 | 0.57 | 0.71 |

Table 4.1: Means of selected variables to be used in regression analysis.

Notes: All dollar values are calculated in 2009 dollars. All mean values are adjusted by sample weights.

| | High school diploma | | Bachelor's degree | |
|---|---------------------|-----------|-------------------|------------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support receipt | -0.0180 | 0.3261* | 0.0442 | -0.2457 |
| | (0.0343) | (0.1901) | (0.0361) | (0.174) |
| Female | -0.0446 | -0.0519 | 0.0851*** | 0.0913*** |
| | (0.0285) | (0.0319) | (0.0286) | (0.0305) |
| Black | 0.0048 | 0.0572 | 0.1090*** | 0.0652 |
| | (0.0311) | (0.0394) | (0.0351) | (0.0463) |
| Hispanic | -0.0395 | -0.0101 | 0.0426 | 0.0178 |
| | (0.0522) | (0.0561) | (0.0375) | (0.0372) |
| Mother's non-child support income (1997) | -0.0056 | -0.0026 | 0.0095 | 0.0006 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0001) |
| Mother's years of schooling | 0.0028 | -0.0073 | 0.0166 | 0.0251** |
| | (0.0110) | (0.0123) | (0.0102) | (0.00982) |
| Cognitive ability index | -0.0016** | -0.0020** | 0.0463*** | 0.0500*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | 0.5710*** | 0.6752*** | -0.4991*** | -0.5874*** |
| | (0.1982) | (0.2233) | (0.1080) | (0.1139) |
| | | | | |
| Observations | 920 | 920 | 920 | 920 |
| R-squared | 0.019 | 0.088 | 0.137 | 0.042 |

Table 4.2: IV estimates of the impact of child support receipt on educational performance.

Notes: Robust standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | Child support receipt |
|--|-----------------------|
| | 0.0110 |
| Female | 0.0119 |
| | (0.1041) |
| Black | -0.3490*** |
| | (0.1262) |
| Hispanic | -0.2139 |
| | (0.1622) |
| Mother's non-child support income (1997) | -0.0014 |
| | (0.0000) |
| Mother's years of schooling | 0.0580** |
| | (0.0259) |
| Cognitive ability index | 0.0059*** |
| | (0.0000) |
| State non-welfare child support expenditures | 0.0006** |
| | (0.0000) |
| State non-welfare child support collections | -0.0005*** |
| | (0.0000) |
| Indicators of self-reported health status | Yes |
| Constant | -5.4871 |
| | (91.6657) |
| | |
| Observations | 635 |
| Log likelihood | -407.0358 |

Table 4.3: Probit results on the probability of receiving child support for educational performance models.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | Child support receipt |
|--|--|
| | |
| Female | 0.0269 |
| | (0.0362) |
| Black | -0.1131*** |
| | (0.0409) |
| Hispanic | -0.0765* |
| | (0.0440) |
| Mother's non-child support income (1997) | -0.0012 |
| | (0.0000) |
| Mother's years of schooling | 0.0249 |
| | (0.0089) |
| Cognitive ability index | 0.0009 |
| | (0.0000) |
| Predicted probability of child support receipt | 0.3029*** |
| | (0.0508) |
| Indicators of self-reported health status | Yes |
| Constant | -0.2665*** |
| | (0.0883) |
| Observations | 920 |
| Notes: F-statistic for the first stage regression = 29.82. Sta | indard errors in parentheses. Significance |

Table 4.4: First-stage regression predicting child support receipt for educational performance equations.

levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | Unemployment status | | Log of earnings | |
|---|---------------------|------------|-----------------|------------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support receipt | -0.0168 | -0.0401 | -0.3142* | -2.5014 |
| | (0.0201) | (0.2163) | (0.1760) | (2.4482) |
| Experience | -0.0003*** | -0.0003*** | 0.0024*** | 0.0027*** |
| | (0.0000) | (0.0064) | (0.0006) | (0.0008) |
| Female | -0.0795*** | -0.0791*** | -0.4433* | -0.4012* |
| | (0.0219) | (0.0232) | (0.2308) | (0.2271) |
| Black | -0.0356 | -0.0390 | 0.2251 | -0.0932 |
| | (0.0337) | (0.0452) | (0.2266) | (0.4616) |
| Hispanic | -0.0523 | -0.0543 | 0.8152*** | 0.6290* |
| | (0.0390) | (0.0409) | (0.3113) | (0.3411) |
| Mother's non-child support income (1997) | -0.0010* | -0.0011 | 0.0028 | 0.0008 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Mother's years of schooling | 0.0085* | 0.0091 | 0.0384 | 0.0925 |
| | (0.0050) | (0.0083) | (0.0407) | (0.0797) |
| Indicator of welfare receipt | 0.1341*** | 0.1318*** | -1.2763*** | -1.4512*** |
| | (0.0291) | (0.0341) | (0.3170) | (0.4192) |
| Cognitive ability index | -0.0003 | -0.0003 | 0.0016*** | 0.0017*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| County-level unemployment rate (2009) | 0.00154 | 0.0014 | 0.0014 | -0.0098 |
| | (0.0034) | (0.0039) | (0.0425) | (0.0477) |
| Indicators of educational attainment | Yes | Yes | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | 0.1912** | 0.1842 | 2.1833* | 1.5085 |
| | (0.0785) | (0.1154) | (1.3092) | (1.4881) |
| | | | | |
| Observations | 916 | 916 | 916 | 916 |
| R-squared | 0.081 | 0.080 | 0.225 | 0.145 |

Table 4.5: OLS and IV estimates of the impact of child support receipt on labor outcomes.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | Child support receipt |
|--|-----------------------|
| | |
| Experience | 0.0001* |
| | (0.0001) |
| Female | 0.027 |
| | (0.036) |
| Black | -0.1321*** |
| | (0.0443) |
| Hispanic | -0.0831* |
| | (0.0479) |
| Mother's non-child support income (1996) | -0.0011* |
| | (0.0000) |
| Mother's years of schooling | 0.0221** |
| | (0.0088) |
| Cognitive ability index | 0.0009 |
| | (0.0000) |
| Indicator of welfare receipt | -0.0714 |
| | (0.0531) |
| County-level unemployment rate (2009) | -0.0023 |
| | (0.0095) |
| Predicted probability of child support receipt | 0.2451*** |
| | (0.0718) |
| Indicators of educational attainment | Yes |
| Indicators of self-reported health status | Yes |
| Constant | -0.3063** |
| | (0.1396) |
| Observations | 916 |

 Table 4.6: First-stage regression predicting child support receipt for labor models.

Notes: F-statistic for the first stage regression = 23.05. Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | Child support receipt |
|--|-----------------------|
| | |
| Experience | 0.0003 |
| | (0.0003) |
| Female | 0.0044 |
| | (0.1082) |
| Black | -0.2913** |
| | (0.1321) |
| Hispanic | -0.1790 |
| | (0.1644) |
| Mother's non-child support income (1996) | -0.0014 |
| | (0.0000) |
| Mother's years of schooling | 0.0538** |
| | (0.0263) |
| Cognitive ability index | 0.0035 |
| | (0.0000) |
| Indicator of welfare receipt | -0.2161 |
| | (0.1538) |
| County-level unemployment rate (2009) | -0.0434** |
| | (0.0214) |
| State non-welfare child support expenditures | -0.0005*** |
| | (0.0000) |
| State non-welfare child support collections | 0.0008*** |
| | (0.0000) |
| Indicators of educational attainment | Yes |
| Indicators of self-reported health status | Yes |
| Constant | -5.6021 |
| | (113.4531) |
| Observations | 634 |
| Log likelihood | -398.9957 |

Table 4.7: Probit results on the probability of child support receipt for labor models.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | Poverty ratio | | Welfare receipt | |
|---|---------------|------------|-----------------|-----------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support receipt | -12.659 | 61.3920 | -0.0444 | -0.0725 |
| | (12.2630) | (61.0954) | (0.0295) | (0.3291) |
| Long-term income | 41.2470*** | 39.6545*** | -0.0380*** | -0.0377** |
| | (7.1859) | (7.6789) | (0.0125) | (0.0140) |
| Female | -8.5650 | -9.1624 | 0.1162*** | 0.1165*** |
| | (16.4981) | (17.1736) | (0.0185) | (0.0187) |
| Black | -49.1544*** | -37.9607* | 0.0478 | 0.0433 |
| | (16.2534) | (19.6603) | (0.0336) | (0.0639) |
| Hispanic | -6.6402 | -0.8544 | -0.0145 | -0.0169 |
| | (18.4812) | (19.7097) | (0.0444) | (0.0588) |
| Mother's non-child support income (1996) | 0.0012*** | 0.0013*** | -0.0006 | -0.0006 |
| | (0.0003) | (0.0004) | (0.0000) | (0.0000) |
| Mother's years of schooling | 5.2139 | 2.9584 | -0.0041 | -0.0034 |
| | (4.1240) | (4.9127) | (0.0049) | (0.0093) |
| Cognitive ability index | 0.0004 | 0.0005 | -0.0007 | -0.0007 |
| | (0.0004) | (0.0005) | (0.0000) | (0.0000) |
| County-level unemployment rate (2009) | 4.5106* | 4.7728 | 0.0003 | 0.0002 |
| | (2.5969) | (2.8616) | (0.0047) | (0.0048) |
| Indicators of educational attainment | Yes | Yes | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | -161.9834** | -122.9433 | 0.3239** | 0.3151* |
| | (78.2582) | (93.3635) | (0.1429) | (0.1872) |
| | | | | |
| Observations | 776 | 776 | 920 | 920 |
| R-squared | 0.221 | 0.193 | 0.143 | 0.142 |

Table 4.8: OLS and IV estimates of the impact of child support receipt on adulthood economic well-being.

Notes: Robust standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | Poverty regression | Welfare regression |
|--|-----------------------|-----------------------|
| Variables | Child support receipt | Child support receipt |
| | | |
| Long-term income | 0.0203* | 0.0099 |
| | (0.0119) | (0.0108) |
| Female | 0.0192 | 0.0182 |
| | (0.0361) | (0.0350) |
| Black | -0.1101** | -0.1469*** |
| | (0.0460) | (0.0433) |
| Hispanic | -0.0711 | -0.0844* |
| | (0.0437) | (0.0458) |
| Mother's non-child support income (1996) | -0.0015 | -0.0011 |
| | (0.0000) | (0.0000) |
| Mother's years of schooling | 0.0263** | 0.0240** |
| | (0.0093) | (0.0087) |
| Cognitive ability index | -0.0001 | 0.0002 |
| | (0.0000) | (0.0000) |
| County-level unemployment rate (2009) | -0.0002 | -0.0027 |
| | (0.0093) | (0.0096) |
| Predicted probability of child support receipt | 0.3347*** | 0.2427*** |
| | (0.0579) | (0.0762) |
| Indicators of educational attainment | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes |
| Constant | -0.4706 | -0.3013 |
| | (0.1539) | (0.1464) |
| Observations | 776 | 920 |

Table 4.9: First-stage regression predicting child support receipt for economic well-being equations.

Notes: F-statistic for the first stage regression of poverty equation = 62.66. F-statistic for the first stage regression of welfare equation = 29.82. Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | Poverty regression | Welfare regression |
|--|-----------------------|-----------------------|
| Variables | Child support receipt | Child support receipt |
| | | |
| Long-term income | 0.0142 | 0.0229 |
| | (0.0429) | (0.0424) |
| Female | 0.0139 | -0.0096 |
| | (0.1082) | (0.1069) |
| Black | -0.3270** | -0.3455*** |
| | (0.1300) | (0.1291) |
| Hispanic | -0.1825 | -0.1893 |
| | (0.1638) | (0.1638) |
| Mother's non-child support income (1996) | -0.0015 | -0.0014 |
| | (0.0000) | (0.0000) |
| Mother's years of schooling | 0.0551** | 0.0567** |
| | (0.0265) | (0.0265) |
| Cognitive ability index | 0.0034 | 0.0037 |
| | (0.0000) | (0.000) |
| County-level unemployment rate (2009) | -0.0446** | -0.0448** |
| | (0.0213) | (0.0213) |
| State non-welfare child support expenditures | -0.0005*** | 0.0008*** |
| | (0.0000) | (0.0000) |
| State non-welfare child support collections | 0.0008*** | -0.0005*** |
| | (0.0000) | (0.0000) |
| Indicators of educational attainment | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes |
| Constant | -5.4607 | -5.5030 |
| | (113.2809) | (98.8326) |
| Observations | 635 | 635 |
| Log likelihood | -400.1086 | -401.1680 |

Table 4.10: Probit results on the probability of receiving child support for economic well-being equations.

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | High school diploma | | Bachelor's degree | |
|---|---------------------|----------|-------------------|------------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support payment (Log) | -0.0030 | -0.0849 | 0.0060 | -0.0184 |
| | (0.0045) | (0.0276) | (0.0046) | (0.0229) |
| Female | -0.0445 | -0.0477 | 0.0852*** | 0.0805** |
| | (0.0285) | (0.0303) | (0.0285) | (0.0307) |
| Black | 0.0034 | 0.0055 | 0.1109*** | 0.0754* |
| | (0.0314) | (0.0458) | (0.0352) | (0.0439) |
| Hispanic | -0.0407 | -0.0170 | 0.0443 | 0.0053 |
| | (0.0526) | (0.0601) | (0.0374) | (0.0350) |
| Mother's non-child support income (1996) | -0.0066 | -0.0010 | 0.0095 | 0.0010 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Mother's years of schooling | 0.00302 | 0.0078 | 0.0165 | 0.0193 |
| | (0.0110) | (0.0127) | (0.0102) | (0.0117) |
| Cognitive ability index | -0.0016** | -0.0016* | 0.0046*** | 0.0051*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | 0.5688*** | 0.5215** | -0.4971*** | -0.5265*** |
| | (0.1975) | (0.2074) | (0.1078) | (0.1253) |
| | | | | |
| Observations | 920 | 868 | 920 | 868 |
| R-squared | 0.019 | 0.022 | 0.137 | 0.106 |

| Table 4.11: OLS and IV estimates of th | e impact of child support i | ncome on educational |
|--|-----------------------------|----------------------|
| _performance. | | |
| | TT' 1 1 1 1' 1 | |

Notes: Robust standard errors in parentheses. F-statistic for the first stage is 24.22. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| Variables | Child support income |
|--|----------------------|
| Female | 0.2214 |
| | (0.2649) |
| Black | -1.3604*** |
| | (0.345) |
| Hispanic | -0.6348** |
| | (0.3017) |
| Mother's non-child support income (1996) | -0.0083 |
| | (0.0089) |
| Mother's years of schooling | 0.2205** |
| | (0.0706) |
| Cognitive ability index | 0.0014** |
| | (0.0000) |
| State non-welfare child support expenditures | -0.0001** |
| | (0.0000) |
| State non-welfare child support collections | 0.0001*** |
| | (0.0000) |
| Self-reported health status | Yes |
| Constant | -2.0989 |
| | (0.8410) |
| Observations | 868 |

Table 4.12 – First-stage regression predicting child support payment for educational performance models.

Notes: F-statistic for the first stage regression = 24.22. Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1

| | Unemployment status | | Earnings (Log) | |
|---|---------------------|------------|----------------|------------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support income (Log) | -0.0033 | 0.0417 | -0.0275 | -0.3560 |
| | (0.0024) | (0.0309) | (0.0243) | (0.2913) |
| Experience | -0.0003*** | -0.0003*** | 0.0024*** | 0.0029*** |
| | (0.0000) | (0.0092) | (0.0006) | (0.0007) |
| Female | -0.0794*** | -0.0884*** | -0.4452* | -0.4304 |
| | (0.0220) | (0.0242) | (0.2386) | (0.2677) |
| Black | -0.0375 | 0.0302 | 0.2349 | -0.2000 |
| | (0.0335) | (0.0386) | (0.2309) | (0.4927) |
| Hispanic | -0.0538 | -0.0192 | 0.8166*** | 0.5017 |
| | (0.0391) | (0.0415) | (0.3138) | (0.3229) |
| Mother's non-child support income (1996) | -0.0011* | -0.0047 | 0.0029 | 0.0027 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0052) |
| Mother's years of schooling | 0.0088* | -0.0006 | 0.0362 | 0.0875 |
| | (0.0050) | (0.0087) | (0.0413) | (0.0775) |
| Indicator of welfare receipt | 0.1326*** | 0.1620*** | -1.2711*** | -1.4261*** |
| | (0.0292) | (0.0366) | (0.3193) | (0.3977) |
| Cognitive ability index | -0.0034 | -0.0056 | 0.0016*** | 0.0017*** |
| | (0.0000) | (0.0000) | (0.0000) | (0.000) |
| County-level unemployment rate (2009) | 0.0015 | 0.0031 | 0.0019 | -0.0241 |
| | (0.0035) | (0.0055) | (0.0427) | (0.0594) |
| Indicators of educational attainment | Yes | Yes | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | 0.1882** | 0.2953** | 2.2096* | 1.5405 |
| | (0.0797) | (0.1350) | (1.3169) | (1.2968) |
| Observations | 916 | 865 | 916 | 865 |
| R-squared | 0.082 | -0.125 | 0.224 | 0.106 |

Table 4.13: OLS and IV estimates of the impact of child support income on labor outcomes.

Notes: Standard errors in parentheses. F-statistic for the first stage is 22.73. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1

| Variables | Child support income |
|--|----------------------|
| Francisco | 0.0011 |
| Experience | 0.0011 |
| Ferrels | (0.0006) |
| remaie | 0.2282 |
| D11- | (0.2703) |
| Black | -1.25/1*** |
| | (0.3668) |
| Hispanic | -0.5896* |
| | (0.3250) |
| Mother's non-child support income (1996) | -0.0093 |
| | (0.0000) |
| Mother's years of schooling | 0.1820** |
| | (0.0702) |
| Cognitive ability index | 0.0060 |
| | (0.0000) |
| Indicator of welfare receipt | -0.7504* |
| | (0.3972) |
| County-level unemployment rate (2009) | -0.0793 |
| | (0.0647) |
| State non-welfare child support expenditures | -0.0001** |
| | (0.0000) |
| State non-welfare child support collections | 0.0002*** |
| | (0.0000) |
| Indicators of educational attainment | Yes |
| Indicators of self-reported health status | Yes |
| Constant | -1.9684 |
| | (1.1550) |
| Observations | 865 |

Table 4.14: Frist-stage regression predicting child support income for labor equations.

Notes: F-statistic for the first stage regression = 22.73. Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

| | Poverty ratio | | Welfare receipt | |
|---|---------------|--------------|-----------------|------------|
| Variables | OLS | IV | OLS | IV |
| | | | | |
| Child support income (Log) | -1.7080 | -6.6642 | -0.0065* | 0.0238 |
| | (1.5139) | (20.2380) | (0.0036) | (0.0211) |
| Long-term income | 41.2888*** | 46.8214*** | -0.0379*** | -0.0446*** |
| | (7.2068) | (8.2572) | (0.0125) | (0.0129) |
| Female | -8.5849 | -3.2649 | 0.1161*** | 0.0989*** |
| | (16.5075) | (17.9217) | (0.0185) | (0.0167) |
| Black | -49.6034*** | -64.8343* | 0.0455 | 0.0929 |
| | (16.2814) | (37.0210) | (0.0336) | (0.0553) |
| Hispanic | -7.0443 | -19.2850 | -0.0166 | 0.0183 |
| | (18.2700) | (24.3526) | (0.0446) | (0.0502) |
| Mother's non-child support income (1996) | 0.0012*** | 0.0012*** | -0.0066 | -0.0038 |
| | (0.0004) | (0.0004) | (0.0000) | (0.0000) |
| Mother's years of schooling | 5.2653 | 5.7841 | -0.0039 | -0.0115* |
| | (4.1456) | (8.2519) | (0.0050) | (0.0064) |
| Cognitive ability index | 0.0005 | 0.0005 | -0.0071 | -0.0059 |
| | (0.0005) | (0.0004) | (0.0000) | (0.0000) |
| County-level unemployment rate (2009) | 4.5042* | 3.4524 | 0.0003 | 0.0017 |
| | (2.5902) | (2.5887) | (0.0047) | (0.0048) |
| Indicators of educational attainment | Yes | Yes | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes | Yes | Yes |
| Constant | -161.9099** | -204.9772 | 0.3207** | 0.4450*** |
| | (78.6329) | (134.6057) | (0.1424) | (0.1555) |
| | | 7 2 (| | 0.50 |
| Observations | 776 | 736 | 920 | 868 |
| R-squared | 0.222 | 0.235 | 0.144 | 0.060 |

Table 4.15: OLS and IV estimates of the impact of child support income on adulthood economic well-being

Notes: Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1

| Variables | Poverty equation | Welfare equation |
|---|-----------------------------------|------------------------------------|
| | Child support income | Child support income |
| | | |
| Long-term income (Log) | 0.1576* | 0.1003 |
| | (0.0874) | (0.0798) |
| Female | 0.1287 | 0.1627 |
| | (0.2694) | (0.2737) |
| Black | -1.3239*** | -1.3809*** |
| | (0.3986) | (0.3532) |
| Hispanic | -0.5608* | -0.5963* |
| | (0.3137) | (0.3138) |
| Mother's non-child support income (1996) | -0.0012 | -0.0093 |
| | (0.0000) | (0.0085) |
| Mother's years of schooling | 0.2335*** | 0.1981** |
| | (0.0746) | (0.0692) |
| Cognitive ability index | 0.0043 | 0.0060 |
| | (0.0000) | (0.0000) |
| County-level unemployment rate (2009) | -0.0611 | -0.0838 |
| | (0.0714) | (0.0661) |
| State non-welfare child support expenditures | -0.0001*** | -0.0001 *** |
| | (0.0000) | (0.0000) |
| State non-welfare child support collections | 0.0001 ** | 0.0001** |
| | (0.0000) | (0.0000) |
| Indicators of educational attainment | Yes | Yes |
| Indicators of self-reported health status | Yes | Yes |
| Constant | -3.7312*** | -2.0921 |
| | (1.1538) | (1.1157) |
| Observations | 736 | 868 |
| Notes: E-statistic for the first stage regression of po | verty equation $= 78.10$ E statis | tic for the first stage regression |

Table 4.16: First-stage regression predicting child support income for economic well-being equations.

Notes: F-statistic for the first stage regression of poverty equation = 78.10. F-statistic for the first stage regression of welfare equation = 18.73. Standard errors in parentheses. Significance levels are: *** p<0.01, ** p<0.05, * p<0.1.

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CHAPTER 5

CONCLUSIONS

5.1 CONCLUSIONS

Single mothers and their children rely on child support paid by absent fathers as an important source of income. Numerous state and federal laws have been developed to secure this pecuniary transfer and determine how much female-headed families should receive. The dissertation presented here is an attempt to discover the potential role of child support in altering single mothers' material well-being, labor decisions, and their children's achievements. My dissertation extends prior work by investigating the consumption impacts of child support transfer as well as the long-term effects of child support on children's future success. Moreover, by implementing a modified version of two-stage regression analysis, I consider and overcome the empirical problem of "forbidden regression", which has rarely been addressed in the previous research.

My findings indicate that the material well-being of female-headed families measured by their consumption is not responsive to receiving child support or the amount of transfer. In other words, my analysis suggests that the CSE program hardly fulfills the policymakers' goals of enhancing the beneficiaries' well-being. There could be several explanations for this outcome. For instance, child support orders may not be generous enough to produce any observable changes in recipients' material well-being and consumption schedule. Moreover, fathers' inability or unwillingness to pay child support might divert the program from achieving its objectives. Also, a formal child support might substitute for informal transfer from fathers who provide for their children even if they are not court-ordered to do so.

In addition to highlighting the consumption outcomes of child support policy, the second essay of my dissertation investigates the potential labor supply effects. This essay reveals a negative association between child support and single mothers' labor market decisions. When single mothers receive additional non-labor income they tend to work fewer hours and enjoy more leisure time. This finding, however, does not necessarily imply that mothers would spend more time with their children. In fact, due to the lack of information about single mothers' time allocation decisions in my data, I am not able to verify changes in time use in favor of child-related activities.

Finally, to explore the possible persistent effects of child support transfer over the life cycle of recipients, I compare future achievements of recipients with non-recipients. Results from the third essay of my dissertation suggest that recipients differ from non-recipients only in the likelihood of obtaining a high school degree. This finding seems less surprising in light of the conclusions of essays one and two. In fact, if incremental changes in the early-life resources of recipients lead to no significant improvement in their current well-being, we cannot expect to observe any lasting impact on their future achievements.

From the policy perspective, the CSE is an income redistribution program that does not involve taxpayers' money but has an ability to reduce economic insecurity of mother-only families. The existing CSE program is a product of several waves of legislation stretched for several decades. The moves to replace public welfare with private transfers took place simultaneously with public policy reforms of the 1980s and 1990s. These welfare reforms reduced the welfare rolls and increased earnings of recipients since early 1980s (Meyer & Sullivan, 2004; Meyer & Sullivan, 2012). However, their positive impact on material well-being appeared to be insignificant (Meyer & Sullivan, 2004). As mentioned above, my dissertation also provides limited evidence that the child support transfer enhances the material well-being of recipients. Moreover, I recorded a negative association between child support and earnings. The critical question here is how the welfare policy and the CSE interact. For instance, there is a chance that the incremental change in earnings generated by a welfare transfer compensates the negative earning impact of a child support payment. Uncovering this relationship could provide more insights on the effectiveness of both public and private transfers received by single mothers and their economic well-being. Finally, despite limited gains in terms of material well-being, the non-material aspects of the quality of life of CSE recipients could increase substantially if CSE leads to more favorable time allocations.