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TANF EFFECTIVE BENEFIT GUARANTEES, TAX RATES, AND CHILD-ONLY PENALTIES, 2000–2016

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Temporary Assistance for Needy Families (TANF) has changed considerably since 2000 with lower benefit levels, increased child-only cases, greater work incentives, and increased in-kind transfers. This paper describes the national and regional trends in TANF policies by measuring effective benefit guarantees, tax rates, and child-only penalties using administrative TANF data. Effective policies are the average policies observed in data and often differ from statutory policies because they incorporate behavioral responses to numerous benefit determination policies. The share of child-only cases, where the parent is ineligible for benefits, has risen by 20 percentage points during this period. This is the first paper to estimate the effective child-only penalty, or the benefit guarantee reduction associated with moving from a single-parent to a child-only case, and will help in modeling household decisions related to work requirement compliance and response to time limits. Effective cash benefit guarantees average $437 per month for a three-person household, 88 percent of the statutory benefit level. Between 2000 and 2016, these guarantees decreased by 22 percent. The child-only penalty averages $75 per month in cash benefits, a modest 17 percent reduction in benefits. TANF increasingly uses in-kind transfers such as subsidized child care. When included in the benefit amount, effective benefit guarantees rise to $569, earned income tax rates drop by 14 percentage points, and the child-only penalty increases to $180.

Keywords: public assistance programs, tax benefits

JEL Code: H53

I. INTRODUCTION

Temporary Assistance for Needy Families (TANF) is a vital backstop for low-income households as the primary program offering cash assistance to non-working non-disabled families. It redistributes income to the poorest households and provides a consumption floor to families with children. It provides insurance value to unemployed parents ineligible for unemployment insurance benefits, supplements disability payments for low-income families with children, and provides all child citizens a basic level of

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income regardless of parental citizenship status. Changes in program design and eligibility requirements have greatly altered the benefits and incentives facing potential recipients. As Figure 1 shows, these changes have coincided with recipients declining by two-thirds since 2000 to the lowest participation rate in more than 60 years. Summarizing the thick web of TANF benefit determination rules through measuring effective policies is necessary to evaluate program performance in achieving policy goals and to analyze the effectiveness of various state policy regimes.

I focus on four policy parameters to summarize the TANF policy environment: benefit guarantees, both earned and unearned income tax rates, and child-only penalties. Together, these four parameters capture the dominant incentives and generosity of TANF benefit formulas. A benefit guarantee is the maximum benefit available to households that have no earned or unearned income. Tax rates are the reduction in TANF benefits associated with an increase in income. Child-only cases occur when children are TANF eligible but parents are ineligible. The child-only penalty is the benefit guarantee reduc-

Figure 1

Percentage of U.S. Population Receiving AFDC/TANF Benefits: 1960–2016

Notes: Number of AFDC/TANF recipients as a percentage of U.S. population between 1960 and 2016. Recipients are from AFDC Basic 1960–1995 and TANF 1996–2016. The dashed line represents the AFDC to TANF transition in 1996.
Source: Department of Health and Human Services and the Census Bureau.

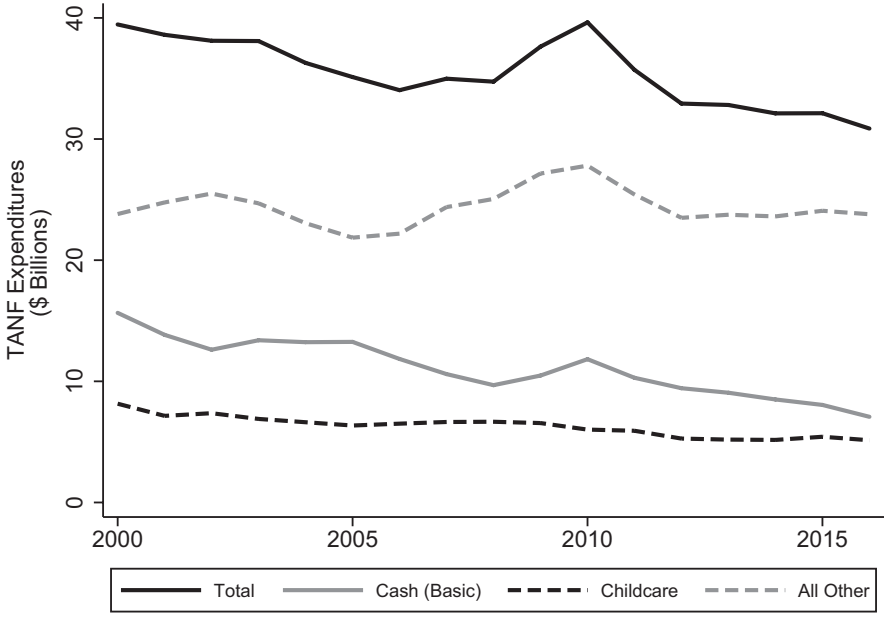
tion resulting from parental ineligibility for TANF. The child-only penalty reveals how households are punished for losing eligibility, such as from failing to meet work requirements or for exceeding time limits, and also provides the benefit differential from parental ineligibility for other reasons such as citizenship or disability status.

I use National TANF Data System (NTDS) data to estimate effective state-level policy parameters between 2000 and 2016. This large, national household-level administrative dataset includes program benefits along with a rich set of household characteristics and has been used previously by Ziliak (2007) to estimate effective TANF policies during its transition following welfare reform in 1996. Effective policy parameters characterize the average observed benefit formula and better represent the expected benefit formula a naive approach based on statutory policies would predict. Effective policies provide both policymakers and economists with a superior gauge to assess TANF, whether that is in achieving redistributive goals, encouraging labor force activity and family formation, providing an adequate level of consumption for needy families, or modeling low-income household decisions. Effective policies often differ from statutory policies due to the interaction of behavioral choices and a complex benefit determination process. The 2016 statutory cash benefit guarantee for a three-person household in California was $788, yet I find that the effective benefit guarantee received by a three-person household with no income was only $603. A combination of behavioral choices and benefit policies can lead to the statutory and effective policy discrepancies, including behavioral sanctions, time-varying policies, income disregards, special needs assessments, family cap policies, caseworker discretion, and human error. Fully accounting for this benefit complexity would be challenging as each of these policies often varies across multiple dimensions. For instance, the family cap policy in California states that the birth of a new child for an existing TANF case will not increase the benefit guarantee unless the family leaves TANF for 2 of the 10 months prior to the birth or until the family has left TANF for 24 months following the birth. This policy will lead to many (but not all) cases with new children in California receiving benefits based on a smaller household size than the statutory policies predict given the household size.

Historically, Aid to Families with Dependent Children (AFDC), the predecessor to TANF, was predominantly a cash-transfer program. But welfare reform replaced AFDC with TANF and permitted states to divert TANF funds away from cash assistance and toward other forms of assistance. Figure 2 displays total TANF expenditures since 2000, broken down into cash payments, funding for subsidized child care, and all other spending. In 2016, only $7.4 billion of TANF funds were spent on cash assistance, while $23.5 billion were spent on other assistance programs including $5.1 billion on subsidized child care. Since 2000, total real TANF expenditures have declined by $8.6 billion and are almost entirely accounted for by the decrease in cash assistance spending. Using in-kind transfers, such as subsidized child care, can be appealing to policymakers because they incentivize preferred consumption choices and behaviors but are likely valued less by recipients than the cash transfer equivalent. To account for the rising importance of TANF in-kind transfers, I consider two definitions of TANF benefits: cash and cash plus in-kind transfers. While complex, the benefit computation rules for

Figure 2

TANF Expenditures by Category: 2000–2016



Notes: Expenditures include both federal TANF and state maintenance-of-effort funds in constant 2016 dollars. Total expenditures include transfers to the Child Care Development Fund and Social Services Block Grant. Cash expenditures refer to reported basic assistance spending. Child care expenditures include both assistance and non-assistance spending and transfers to the Child Care Development Fund. All other spending includes many categories, such as Head Start, work supports, child welfare services, education and training, and administrative costs.

Sources: Categorical expenditures for 2000–2009 come from the *Indicators of Welfare Dependence: Annual Report to Congress, 2009–2013*. Categorical expenditures for 2010–2016 come from the Administration for Children and Families. Transfers to the Child Care Development Fund and Social Services Block Grant come from Lynch (2012, 2016).

cash assistance are well defined. The benefit computation rules for in-kind transfers are more opaque and learning how they are distributed is important for understanding their role assisting and incentivizing TANF households.

Previous research by Lurie (1974), Hutchens (1978), Fraker, Moffitt, and Wolf (1985), McKinnish, Sanders, and Smith (1999), and Ziliak (2007) provides a history of effective policies for TANF and AFDC from 1967 through 2002. This paper updates effective TANF policies through 2016 using a similar methodology to prior work and is the first paper to include estimates of the effective child-only penalty and to include alternative parameters incorporating TANF in-kind transfers. Of particular interest,

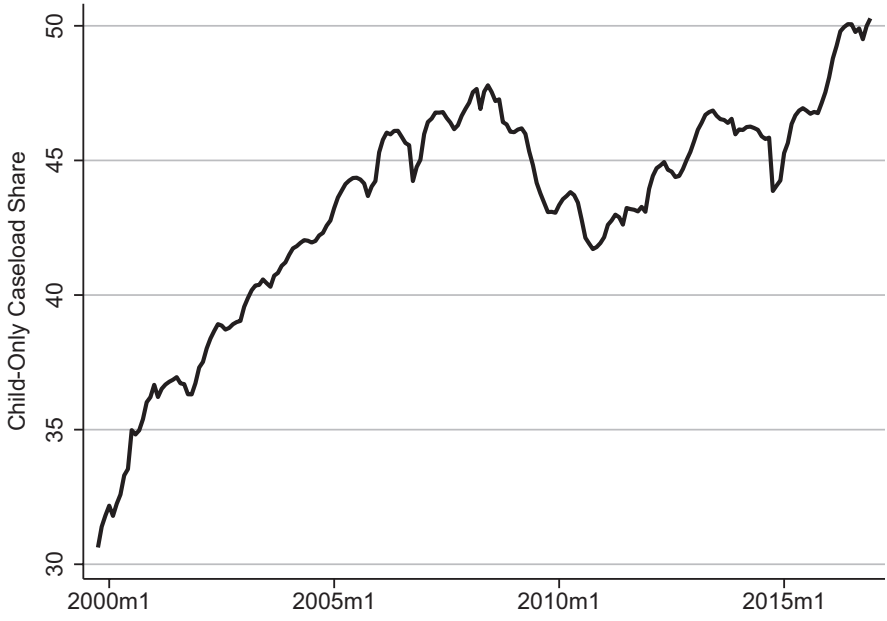
tracking effective policies during this recent period could potentially provide insight as to why caseloads declined severely during a period that lacked many major statutory policy changes.

TANF has evolved across a variety of dimensions since its creation. As shown in Figure 3, one intriguing development has been the increase in TANF child-only cases growing from around 30 percent to over half of caseloads. The effective child-only penalty may help explain this rise. Maintaining TANF eligibility for parents is costly whether it be a result of delaying current benefits in response to time limits or satisfying work requirements, and a reduction in the child-only penalty may increase TANF participation and reduce work-requirement compliance, leading to more child-only cases.

I provide the first measure of the effective child-only penalty. The cash penalty averages $75 per month for a three-person family, representing a modest 17 percent reduction in cash benefits. The penalty decreases as the number of children increases. During this time, the effective child-only penalty declines by nearly 30 percent and is higher in regions with a lower share of child-only cases. When in-kind transfers are added, the child-only penalty increases to $180 per month and increases as the number

Figure 3

TANF Child-Only Caseload Share: 2000–2016



Source: Department of Health and Human Services.

of children increases, suggesting that in-kind transfers represent the majority of lost benefits from parental ineligibility.

Another development since 2000 has been the persistent deterioration of cash benefit guarantees. Only two states have increased real statutory cash benefit guarantees by more than 5 percent, while 34 states have lowered guarantees by more than 20 percent. TANF remains the primary cash assistance program for non-working non-disabled U.S. households, and having the flexibility of cash as opposed to in-kind transfers can be highly valuable in covering repairs, household goods, or emergency needs. Measuring the effective decline of this cash assistance highlights the regional variation in income redistribution and the consumption level available to vulnerable families.

Examining national trends and regional variation among single-parent cases, I find that, since 2000, effective cash benefit guarantees have declined 22 percent, with the largest declines in Western and Northeastern states. Ziliak (2007), examining data through 2002, found that, after welfare reform, effective and statutory benefit guarantees began to diverge. I find average effective benefit guarantees between 2000 and 2016 remained near 88 percent of statutory levels throughout the period. This is slightly surprising because most state TANF policy changes, such as increasing sanction penalty amounts, predict lower effective benefits, but their aggregate impact has not changed the relationship between effective and statutory benefits. When including in-kind transfers, the lower benefit guarantees in Southern states are boosted by greater use of in-kind transfers.

Last, work incentives have been a driving force of many TANF policy developments. One example is the low effective TANF earned income tax rates during this period. Averaging 12 percent, TANF allows eligible households to maintain more of their TANF benefits while working, particularly in the early months of new employment, relative to AFDC. The growth of in-kind transfers has also promoted work since TANF has largely focused on work-related in-kind transfers such as subsidized child care and transportation benefits. The in-kind portion of benefit guarantees averaged $132 per month, or 23 percent of the benefit guarantee, and rose 17 percent, while cash benefits declined by 22 percent. Including in-kind transfers reduces the effective earned income tax rate by 14 percentage points and results in two-thirds of states subsidizing earned income. Unearned income tax rates are similar to earned income tax rates using cash benefits, but no analogous decline occurs using cash benefits plus in-kind transfers because in-kind transfers like child care subsidies and transportation benefits are not subject to implicit tax rates. Collectively, these developments align incentives toward working more and could result in greater labor force attachment and human capital formation among TANF eligible parents, yielding long-term economic benefits.

II. TANF OVERVIEW

TANF and its predecessors have a long history in the U.S. social safety net dating back to 1935.[1] As Figure 1 shows, AFDC participation increased sharply during the late 1960s to early 1970s and then again during the 1990s. Concerns about work disincen-

[1] The program was named Aid to Dependent Children at its inception; the name was changed to include "Families with" in 1962.

tives and rising expenditures led to AFDC being replaced by TANF in 1996 as part of welfare reform, officially called the Personal Responsibility and Work Opportunity Reconciliation Act. While the caseload decline immediately following the creation of TANF has been well researched and debated considerably, Ziliak (2015) points out that far less TANF research has been published since that initial period and the causes of the continued decline are less known.[2]

A. Legislative History

Welfare reform fundamentally changed the U.S. welfare system by replacing AFDC with TANF. Notable changes between TANF and AFDC include time limits, work requirements, and increased state discretion in setting eligibility and benefit rules. AFDC was an open-ended, federally funded program; TANF is an annual $16.5 billion block grant to states, fixed in nominal terms (Schott, Pavetti, and Finch, 2012). Each state is required to provide funds in addition to federal TANF grants, referred to as "maintenance of effort" funds, which have varied between $10 and $15 billion (Schott, Pavetti, and Finch, 2012). States have wide discretion on how funds are spent, as long as the funded programs target one of TANF's four goals: (1) provide assistance to needy families; (2) end dependency of needy parents by promoting job preparation, work, and marriage; (3) prevent or reduce out-of-wedlock pregnancies; or (4) encourage formation and maintenance of two-parent families. To continue receiving federal TANF funding, states must ensure that a sufficient proportion of cases meet work participation and time limit requirements. Ziliak (2015) provides a comprehensive overview of TANF history, financing, program details, and related research.

As Figure 2 shows, the fraction of TANF expenditures on cash assistance declined from 40 percent in 2001 to 23 percent in 2016. TANF funding has been diverted toward a wide range of alternative programs. Some TANF funds are now spent supporting pre-existing state programs including Head Start programs, state earned income tax credits, and child welfare services. Other TANF funds provide TANF households with newer in-kind transfer programs including subsidized child care and transportation benefits. Subsidized child care has become a major TANF-funded program. TANF spent $5.1 billion on subsidized child care in 2016, representing three-quarters of what was spent on cash assistance.

The most meaningful federal TANF legislation since 1996 was the 2005 Deficit Reduction Act (DRA) (Ziliak, 2015). The most significant aspect of the DRA was to tighten work participation requirements. According to Parrott et al. (2007), beginning in 2002, states were required to have 50 percent of their TANF single-parent families meeting work participation requirements. To encourage reduction of TANF caseloads, the program had previously provided a work participation rate break for states based on their total caseload reduction relative to 1996. Given the large reduction in TANF caseloads between 1996 and 2005, this caseload reduction credit resulted in a work

[2] Among the relevant papers on the TANF caseload decline are Ziliak et al. (2000), Grogger, Haider, and Klerman (2003), Klerman and Haider (2004), Haider and Klerman (2005), Danielson and Klerman (2008), Bitler and Hoynes (2010), and Frogner, Moffitt, and Ribar (2009).

participation rate far below 50 percent for many states. The DRA changed the base year for the work participation credit from 1996 to 2005 to increase TANF work participation rates. The DRA also altered which adults are considered work eligible in calculating work participation rates. Adults who were not receiving assistance and living with children who were receiving assistance as child-only cases would be considered work eligible and count toward the work participation rate; exceptions were allowed for parents who were minors, disabled and receiving Supplemental Security Income (SSI), or ineligible for TANF due to their immigration status.

The other noteworthy TANF legislation was included in the 2009 American Recovery and Reinvestment Act. This legislation included an infusion of up to $5 billion in emergency funds to help satisfy demand for TANF funds during the Great Recession. Every state except Wyoming requested funds and the full $5 billion was doled out between 2009 and 2010 (Falk, 2010). Despite this increased funding, Bitler and Hoynes (2016) find that TANF did not adequately respond to the increased need during the Great Recession as total caseloads only grew by 14 percent while the unemployment rate doubled to 10 percent.

In addition to this federal legislation, states continually tinkered with their TANF benefit and eligibility policies during this period. One trend included less generous statutory benefit guarantees as almost half of states either kept constant or lowered nominal benefit levels. Otherwise, state TANF policy trends broadly centered on work incentives using a stick and carrot approach. The carrots included increasing income disregards, more generous benefits during the initial months of employment, and loosening asset limits. The sticks, in addition to stricter work requirements from the DRA, included larger sanctions for violating work requirements, fewer work requirement exemptions for women with young children, and shorter and more strictly enforced time limits. While none of these policies affect statutory policies, they would result in changes to effective policies facing households.

B. Benefit Computation

I focus on computing benefits for single-parent and child-only cases, which comprise the large majority of TANF cases. States have discretion over whether to offer TANF benefits to two-parent households; as of January 2016, two-parent cases represented 5 percent of total caseloads and 20 states had no two-parent cases.[3] The TANF benefit formula for eligible single-parent cases can be summarized as follows:

$$(1) \quad B_{ijst} = G_{jst} - t_{st} \times (\max\{Y_{it} + Z_{it} - D_{st}, 0\}),$$

where B_{ijst} is the benefit amount either in cash only or cash plus in-kind transfers, for household i of size j in state s and year t. Household size j includes the adult plus

[3] https://www.acf.hhs.gov/sites/default/files/opre/assistingtwo_parentfamiliesthroughtanf_final_formatted_report.pdf.

dependent children. The benefit amount is a function of the benefit guarantee, G_{jst}, the benefit given to households with no earned or unearned income. For households with positive income, the benefit function is kinked with an initial disregard D_{st} over which the tax rate is zero and then decreases by the tax rate t_{st} applied to earned income, Y_{it}, and unearned income, Z_{it}. States have discretion over inclusion of parental income in child-only cases for benefit determination but typically treat the parental income similarly across child-only and single-parent cases.

Each state chooses its statutory policy parameters in Equation (1) in addition to a multitude of additional policies, rules, and enforcement procedures that affect benefits. The Welfare Rules Database, collected from state TANF agencies by the Urban Institute, records 559 state policy variables for each of 294 state-unit-coverage-program types.[4] This paper estimates the effective state TANF policy parameters to capture how the interaction of these numerous policies with statutory parameters alters the expected benefits and incentives TANF households face.

Effective benefit guarantees can differ from statutory guarantees for many reasons including sanctions, family cap policies, special needs assessments, caseworker discretion, local variation, human error, or other state policy choices. Sanctions reduce benefits in response to a variety of behaviors; they are most commonly assessed for not meeting work activity requirements. For example, in Illinois, TANF recipients not meeting their work activity requirements lose 50 percent of their TANF benefit until compliance. Sanctions are also issued for other discouraged behavior. In Tennessee, a household loses 20 percent of its benefit if a child five or older fails to attend school regularly. Enforcing sanctions lowers the effective benefit guarantee G_{jst} relative to its stated or statutory level.

Family cap policies may also contribute to lower effective benefit guarantees relative to statutory levels, by restricting benefit increases for new children. Typically, a household of size j that adds a new child would increase the benefit guarantee of a TANF household from G_{jst} to G_{j+1st}. However, family cap policies either require benefit guarantees remain at G_{jst} or lower the standard benefit increase from greater household size. In 2000, 21 states had family cap policies, but five states had repealed them by 2016.

An increasing number of states allow for special needs assessments, which can also contribute to discrepancies between effective and statutory benefits. For example, Maine adds $100 to the monthly benefit guarantee for households whose housing costs equal or exceed 75 percent of their countable income. Fourteen other states vary TANF benefit guarantees for families receiving housing assistance (e.g., Rhode Island, where the monthly benefit is reduced by $50 if the household is living in public housing). Together, these policy examples help display how complex the TANF benefit computation formula is in practice and why effective benefits are a necessary measure of program generosity and more closely resemble participant expectations.

In addition to measuring effective TANF cash benefits, I provide the first estimates of the combined cash and TANF in-kind effective policy parameters. In-kind transfers are a large and growing benefit among TANF recipients, yet no prior work has system-

[4] The Welfare Rules Database is available at https://wrd.urban.org/wrd/Query/query.cfm.

atically measured how states structure these benefits for TANF households in practice. Effective in-kind transfer policies similarly measure the average benefits received by TANF households as a function of income, but the statutory in-kind policies may differ from statutory cash benefit policies by including non-linearities such as benefit cliffs and jumps. In-kind benefit guarantees differ from cash benefit guarantees because they may include rationing and may be contingent on factors other than income. For instance, subsidized child care may be available to households without earned income only if they are fulfilling work requirements such as through volunteer work or education. While analogous statutory policy parameters for TANF in-kind transfers in Equation (1) are not available, the effective in-kind transfer parameters can be estimated from administrative caseload data.

Effective tax rates are the average benefit reduction incurred by a marginal dollar increase in either earned or unearned income; they can differ from statutory tax rates t_{st} for several reasons. The benefit computation is a kinked function of income, with an initial earnings disregard region where the tax rate is zero followed by a statutory benefit tax rate applied to income greater than the disregard amount. Effective tax rates depend on the earnings disregard amounts D_{st}, tax rates t_{st}, income distribution of TANF households, and other state policies. For example, some states vary earnings disregards based on length of employment, allowing households to maintain higher earnings disregards and benefit amounts during the initial months of employment, reducing the effective earned income tax rates. This would lower effective tax rates relative to statutory levels. Other states have offered time-limited work incentive payments that subsidize earned income and result in negative effective tax rates. Similarly, if in-kind transfers increase with earned or unearned income, this could result in negative effective tax rates. As discussed earlier, sanctions can alter benefit amounts. If the likelihood of sanctions varies systematically with income, effective tax rates will differ from statutory tax rates.

C. Child-Only Cases

Child-only cases arise when parents are ineligible for TANF but children still qualify based on household income. Moving from a single-parent case to a child-only case reduces household benefits because the "assistance unit," or number of TANF eligible household members, decreases by one when the parent becomes ineligible. A parent becomes ineligible for TANF because they exceed TANF time limits, are disabled and receiving SSI, do not comply with TANF work requirements, are a non-citizen, or because the child is in foster or kinship care.[5]

[5] Not all parents exceeding federal time limits are ineligible for TANF benefits since federal regulations give states flexibility in handling these cases. States are allowed to have up to 20 percent of their total caseloads exceed federal time limits. Further, states can convert single-parent cases to child-only cases prior to reaching the federal time limit since time limits do not apply to child-only cases (Golden and Hawkins, 2012).

There are currently more child-only TANF cases than single-parent TANF cases. For some households, such as those with non-citizen parents, a child-only case may be the only option to receive TANF benefits. However, for most parents, the child-only penalty may be a contributing factor in the decision to satisfy TANF work requirements and other sanction policies or when factoring time limits into the decision to possibly delay benefit take-up. For example, a parent with a high disutility of work may prefer the benefit reduction from ineligibility due to not fulfilling work requirements rather than spending 20 hours per week working. Alternatively, an eligible TANF household must decide whether to claim benefits now or "bank" them for future use since TANF time limits restrict future benefits. As shown by Grogger and Michalopoulos (2003), this trade-off incorporates the present value of claiming relative to the expected future benefit from claiming. This trade-off must consider that future household benefits following expiration of the TANF time limit often do not drop to zero, but instead decrease by the child-only penalty.

Little to no prior work has directly measured the child-only penalty. Mazzolari and Ragusa (2012) provide the most similar comparison by using Survey of Income and Program Participation data to estimate the average change in welfare income when a household passes the TANF time limit thresholds. They find that exceeding TANF time limits leads to an average monthly reduction in TANF benefits of $250. However, this decline includes both a participation decision and a benefit reduction as they are not able to distinguish between a voluntary or mandated TANF removal. Further, they do not distinguish between the child-only case status prior to or following time limit exhaustion. This paper is the first to directly measure the child-only penalty or the average observed benefit guarantee decrease between households losing parental eligibility but remaining on TANF and better reflects the potential benefits available following parental ineligibility.

Benefits for a child-only case can be computed similarly to Equation (1):

$$(2) \quad B_{ijst}^{co} = G_{jst}^{co} - t_{st}^{co} \times (\max\{Y_{it} + Z_{it} - D_{st}, 0\}),$$

where $B_{ijst}^{co}, G_{jst}^{co}$, and t_{st}^{co} are benefit amounts, benefit guarantees, and tax rates for child-only cases, respectively, for household i of size j in state s and year t. Note here that j represents the household size, or number of adults plus children, while benefits are computed only as a function of eligible household members, which would be $j - 1$ for a child-only case. The child-only penalty is the difference in benefit guarantees between a single-parent and child-only case: $G_{jst} - G_{jst}^{co}$. This is the difference in average benefits received by similar households with no earned or unearned income but differing in adult TANF eligibility. The child-only penalty is a combination of the reduction in household size from j to $j - 1$ along with any differential benefit guarantee for child-only cases. In many states, $G_{jst}^{co} = G_{j-1st}$; however, several states use an alternative benefit schedule to determine benefit amounts for child-only cases. For instance, Oregon in 2002 set the monthly benefit guarantee for child-only cases with two children at $588, while single-parent cases with two children received $499. By 2016, the state had reversed

its preferential treatment of child-only cases, providing a benefit guarantee of $410 for child-only cases while giving single-parent cases the same $499 it had provided in 2002. States can also alter child-only benefit guarantees based on the child-only case reason. Both Montana and Wyoming offer a different benefit guarantee to non-citizens relative to disabled child-only cases, though they differ on which type of child-only cases receive higher benefits. The effective child-only penalty measures the average effect of these policies.

III. ESTIMATING EFFECTIVE BENEFIT GUARANTEES, CHILD-ONLY PENALTIES, AND TAX RATES

To determine effective TANF benefit guarantees, child-only penalties, and tax rates for single-parent cases, I estimate the following equation:

$$(3)\quad \text{Benefit}_{ist} = \alpha^0_{st} + \alpha^1_{st}\,\text{Child2}_{ist} + \alpha^2_{st}\,\text{Child3}_{ist} - t^e_{st}\,\text{Earned}_{ist} - t^u_{st}\,\text{Unearned}_{ist} + \varepsilon_{ist},$$

where Benefit_{ist} is the TANF benefit amount received by household $i = 1, \ldots N$ in state $s = 1, \ldots S$ in time period $t = 1, \ldots T$. Child2_{ist} is an indicator equal to one if there are two or more children in the household, and Child3_{ist} is equal to the greater of zero or the number of children minus two. The estimated coefficient α^0_{st} represents the effective benefit guarantee for a single parent with one child with no earned or unearned income. The marginal effective benefit guarantee from a second child is represented by α^1_{st}, while α^2_{st} is the marginal effective benefit for each child greater than two. Earned_{ist} is earned income, Unearned_{ist} is unearned income, and ε_{ist} is a random error term.[6] The coefficients t^e_{st} and t^u_{st} represent the tax rates on earned and unearned income.

Equation (3) is estimated separately using cash benefits and cash plus in-kind transfers for the benefit amount, Benefit_{ist}. When including in-kind transfers, the effective benefit guarantee will grow relative to the cash-only benefit measure if households without income receive in-kind transfers. If in-kind transfers increase with household income, effective tax rates will decrease when including in-kind transfers.

Measuring effective TANF tax rates is important for understanding the incentives faced by potential recipients. Prior work by Ziliak (2007) and McKinnish, Sanders, and Smith (1999) documents high effective tax rates in the AFDC program averaging 25 percent for earned and unearned income between 1983 and 1996. However, as Ziliak (2007) notes, large differences emerge when food stamp benefits are excluded from unearned income because states included food stamp benefits as unearned income. Because no state includes food stamps, now referred to as SNAP benefits, in their benefit calculation during my sample period, I exclude them from unearned income in the main analysis.[7] A

[6] A tobit model was also estimated and yielded nearly identical results; only 30 observations are censored at the minimum payment threshold of $10.

[7] Appendix Table A2 shows results including SNAP benefits. Since TANF benefits are not reduced for increased SNAP benefits, including them reduces unearned tax rate estimates nearly to zero.

few states reveal sizable discontinuities in their benefit formula, creating benefit jumps and cliffs with extremely high or low marginal tax rates. To reduce the influence of these outliers, I top code and bottom code tax rates at 100 and –100 percent.[8]

I estimate Equation (3) separately for child-only cases to calculate the child-only penalty or the difference in effective benefit guarantees for single-parent and child-only cases. For example, I compute the child-only penalty for a three-person family as $(\alpha_{st}^{0} + \alpha_{st}^{1}) - (\alpha_{st}^{CO} + \alpha_{st}^{CO})$. Inclusion of in-kind transfers in the benefit amount would increase the effective child-only penalty if states provide greater in-kind benefits to single-parent relative to child-only cases.

Alternative effective tax rate and benefit guarantees estimated using a household panel are discussed in the Appendix and presented in Table A1. On average, panel estimates are quite similar to ordinary least squares (OLS) estimates.

IV. DATA

A. National TANF Data System

States are required to provide a sample of caseload data to the NTDS each quarter. The NTDS dataset is the TANF equivalent to the earlier AFDC Quality Control dataset, which was created in 1967 to detect program fraud and has been used by Fraker, Moffitt, and Wolf (1985), McKinnish, Sanders, and Smith (1999), and Ziliak (2007) to estimate AFDC effective benefit guarantees and tax rates. I use administrative caseload data from the NTDS, which contain detailed information on recipient benefits, income, household composition, location, and demographic characteristics, to estimate effective guarantee benefit levels and tax rates between 2000 and 2016. NTDS data include 25,827,854 observations in total, or 1,519,286 observations per year.[9]

I restrict the sample to families headed by unmarried females aged 15–65 who have at least one biological dependent child under 18 years old in the household.[10] I divide this sample into single-parent and child-only samples, where child-only families are cases where no adult is listed as affiliated with the assistance unit, meaning they are not eligible for TANF benefits. To reduce the influence of outlier observations, monthly benefit receipt is restricted to $2,000 or less and monthly earned and unearned income are both restricted to less than $3,000, with all dollar values converted to constant 2016 dollars.[11] These sample restrictions leave an average of 590,801 observations per year for the single-parent sample and 641,057 observations per year for the child-only sample. The same restrictions are also used in previous work by Ziliak (2007) and McKinnish,

[8] In total, 93 state-year outlier observations are top or bottom coded out of 6,904 total observations.

[9] Between 2000 and 2011, the data contain an average of 209,124 observations per year. In 2012, 29 states began reporting their universe of TANF caseloads, increasing average observations to 4,663,672 per year.

[10] In total, these restrictions remove 3,683,827 observations, or 15 percent of the sample.

[11] Only 59,962 observations, or 0.2 percent of the sample, were dropped for exceeding one of these dollar-value criteria.

Sanders, and Smith (1999) and, thus, provide researchers with a comparable set of estimates for TANF policies relative to AFDC policies.

Earned income is summed across all household members. Unearned income includes Social Security, SSI, workers compensation, child support, and other unearned income across all household members eligible for TANF benefits, which all count as income in the TANF calculation. I exclude SNAP benefits from unearned income since no state counts SNAP benefits as unearned income.[12]

To calculate monthly in-kind benefits, I sum reported transfers for subsidized child care, transportation benefits, transitional benefits, and "other" TANF benefits. TANF households also may receive benefits from other programs that states help fund using the TANF block grant such as Head Start, child welfare services, and job training programs. However, participation in these programs is not reported in the NTDS data and their monetary value is difficult to calculate. Subsidized child care represents 88 percent of TANF in-kind transfers reported; 15 percent of single-parent families receive subsidized child care at an average monthly benefit of $731 among recipients.

B. Summary Statistics

Table 1 displays summary statistics separately for the single-parent and child-only TANF estimation samples using sample weights and splitting the sample between the earlier period (2000–2008) and the later period (2009–2016). Columns (1) and (2) focus on single-parent cases. The average TANF monthly cash benefit in the early period is $486 and declines by $52 (11 percent) between the early and late periods. For many households, the in-kind transfers received are greater than the cash benefits as the average subsidized child care benefit, conditional on receipt, is 50 percent greater than the average cash benefit. However, total TANF in-kind benefits were a quarter of cash benefits and increased by $6 (5 percent). Monthly unearned income dropped slightly over this period, although average SNAP benefits rose by $73, more than offsetting the decline in TANF cash benefits for these households. The increasing importance of SNAP for TANF households confirms a similar trend, noted in Schmidt, Shore-Sheppard, and Watson (2016), of declining levels of cash assistance relative to in-kind transfers in the U.S. social safety net. Throughout the sample period, around 22 percent of single-parent households reported any earned income, with an average of $873 in income conditional on working.

Columns (3) and (4) in Table 1 display child-only case summary statistics for the earlier and later periods. The average cash benefit in the early period is $414, or 15 percent less than single-parent cases, and declines by $47 (11 percent) in the later period. Parental ineligibility for cash benefits likely disqualifies them from receiving work-related in-kind transfers as well. In-kind benefits are indeed inconsequential among child-only cases, averaging only $18. The large difference in average age between child-only

[12] As Ziliak (2007) shows, inclusion of SNAP benefits lowers estimates of unearned tax rates to near zero. Appendix Table A2 reports alternative tax rate estimates including SNAP benefits.

Table 1

TANF Summary Statistics

	Single Parent		Child Only	
	(1) 2000–2008	(2) 2009–2016	(3) 2000–2008	(4) 2009–2016
TANF cash benefits	485.64 (256.24)	434.08 (214.94)	414.37 (252.40)	366.83 (207.01)
TANF in-kind benefits	118.38 (345.60)	124.29 (347.82)	20.32 (143.18)	16.58 (121.94)
TANF in-kind transfers (CC > 0)	736.59 (564.91)	722.48 (540.23)	576.63 (515.80)	531.45 (462.58)
Number of children	1.91 (1.12)	1.77 (1.02)	1.83 (1.11)	1.87 (1.12)
Head of household age	29.31 (8.27)	28.47 (7.72)	41.12 (13.13)	41.31 (12.74)
Minority (non-white)	0.70 (0.46)	0.69 (0.46)	0.76 (0.43)	0.74 (0.44)
>60 months	0.06 (0.24)	0.09 (0.29)	0.21 (0.41)	0.35 (0.48)
SSI indicator	0.04 (0.19)	0.05 (0.21)	0.30 (0.46)	0.28 (0.45)
Citizen	1.00 (0.05)	0.99 (0.07)	0.67 (0.47)	0.63 (0.48)
Earned income indicator (>0)	0.22 (0.42)	0.23 (0.42)	0.12 (0.32)	0.11 (0.32)
Earned income	195.49 (440.27)	204.10 (447.50)	157.06 (526.93)	102.45 (364.66)
Unearned income	57.75 (188.63)	53.21 (182.84)	39.73 (151.45)	43.21 (163.57)
SNAP benefits	322.05 (186.87)	395.03 (212.33)	164.01 (175.91)	255.70 (227.69)
Observations	690,465	9,353,147	616,940	10,281,032

Notes: All dollar amounts are reported in constant 2016 dollars. Unearned income includes worker's compensation, child support, SSI, Social Security, unemployment benefits, and other unearned income. CC > 0 indicates household reported receiving subsidized child care.
Source: NTDS microdata.

and single-parent cases reflects the higher proportion of child-only cases exceeding the federal lifetime TANF limit, rising from 21 to 35 percent over the sample period. Relative to single-parent cases, child-only cases are far more likely to receive SSI at 30 percent and far less likely to report being headed by a U.S. citizen at 65 percent.[13] Only 12 percent of child-only cases report positive earned income, with the average reported amount conditional on working falling by 30 percent between the early and late periods.

V. TANF EFFECTIVE BENEFIT GUARANTEES, CHILD-ONLY PENALTIES, AND TAX RATES

In this section, I present estimates of effective TANF benefit guarantees, earned and unearned tax rates, and child-only penalties for 2000–2016. Each parameter is estimated separately using the cash benefit and the cash plus in-kind benefit definitions. I then discuss major national trends and regional variation for each of these parameters. I compare my estimates to Ziliak (2007) for our overlapping period of 2000–2002 and find very similar results, as shown in Appendix Figure A1.

A. Benefit Guarantees

Columns (1) and (2) of Table 2 display the average TANF statutory and effective cash benefit guarantees for a three-person single-parent household between 2000 and 2016. I focus on three-person households because they are the median TANF household size, but trends are similar across household size. During this period, average effective benefit guarantees averaged $437, representing 88 percent of the statutory benefit guarantee, and decreased 22 percent from $508 to $394 per month. For comparison, in 2016, receiving the average effective benefit guarantee was equivalent to the income generated from working 15 hours per week at a minimum wage job and would result in an annual income of $4,728, far below the federal poverty level of $20,160.

The differences between Columns (1)–(3) in Table 2 are the average TANF in-kind benefit guarantee households receive in addition to cash benefits. The average in-kind transfer to a household without earned income was $132 per month, or 23 percent of the combined cash and in-kind transfer benefit guarantee. In-kind transfer guarantees rose from $103 per month in 2000 to a high of $154 in 2010 and then declined to $121 by 2016. When including in-kind transfers in TANF benefits, the monthly benefit guarantee declines by 16 percent from $611 to $515. This shift toward greater in-kind transfers may help encourage single mothers to work but could be troubling if these parents do not have sufficient funds to cover basic expenses between employment spells or while training for work.

Figure 4 disaggregates effective benefit guarantees by census region and compares cash to the combined cash plus in-kind transfer guarantees. Southern states consis-

[13] NTDS only includes positive responses to household head citizenship status as a citizen or qualified alien. Other responses are either "Unknown" or missing.

Table 2

TANF Benefit Guarantees and Tax Rates

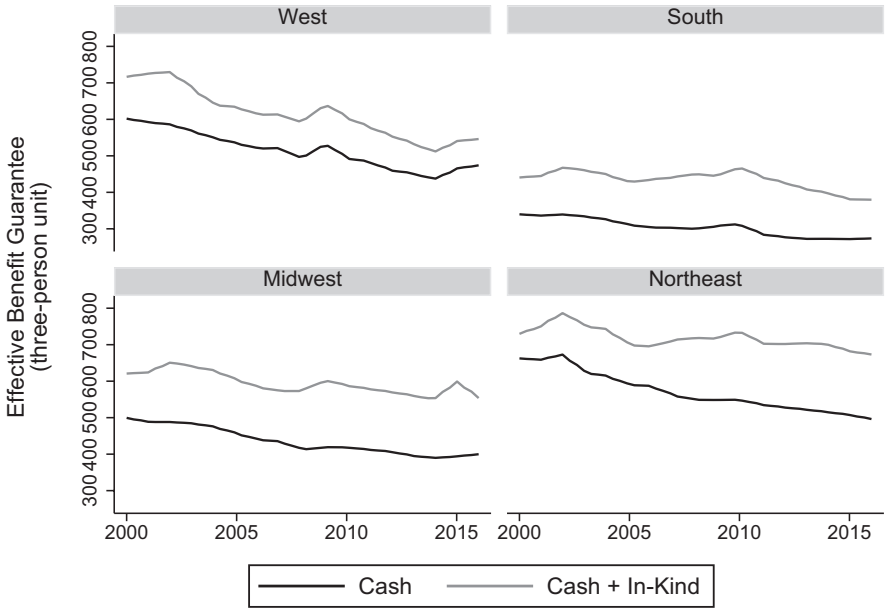
	Statutory Benefit Guarantee	Effective Benefit Guarantee		Earned Income Tax Rate		Unearned Income Tax Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Cash	Cash	Cash + In-Kind	Cash	Cash + In-Kind	Cash	Cash + In-Kind
2000	579	508	611	14.5	1.9	12.2	5.0
2001	559	497	616	13.3	–1.2	9.3	7.0
2002	558	500	639	13.8	–0.9	11.8	9.2
2003	546	4806	610	13.6	0.3	11.7	9.8
2004	537	471	594	13.2	0.4	12.1	14.2
2005	520	454	572	12.6	1.0	10.9	8.2
2006	501	443	563	14.4	3.2	11.1	9.4
2007	491	435	564	12.1	–1.9	8.4	8.7
2008	477	418	562	10.6	–4.1	4.8	2.1
2009	487	435	581	12.1	–2.5	8.5	8.1
2010	477	426	580	13.5	0.5	8.6	9.2
2011	464	410	555	11.5	–4.1	8.6	8.9
2012	451	399	542	11.4	–3.3	7.9	9.2
2013	447	391	529	11.4	–2.7	7.2	8.6
2014	443	384	516	8.8	–2.4	5.7	5.5
2015	450	391	527	10.3	–4.0	8.7	7.9
2016	447	394	515	9.8	–3.4	9.0	8.6
Total	496	437	569	12.1	–1.4	9.2	8.2

Notes: This table presents national average TANF parameter estimates for statutory and effective benefit guarantees as well as effective earned and unearned income tax rates using Equations (1) and (2). Each parameter is estimated separately using either cash-only or combined cash + in-kind transfer benefits. Dollar values for benefit guarantees are in constant 2016 dollars.
Source: NTDS microdata.

tently had the lowest average effective cash benefit guarantee at $303 per month, but those states also had the smallest benefit guarantee decline at 19 percent. Conversely, Northeastern states maintained the highest average effective cash benefit guarantee at $572 per month but declined by 25 percent to $496 by 2016. This regional variation in TANF generosity reveals large variation in the transfer income available to families with no other income sources.

Figure 4

TANF Effective Benefit Guarantees by Region: 2000–2016



Note: Average effective TANF three-person benefit guarantee, by region, for cash and cash + TANF in-kind transfers.
Source: NTDS microdata.

Increases in in-kind transfers helped offset the cash benefit guarantee decline in all regions, except for the West, where the in-kind guarantee fell from $114 per month to $72. The highest average in-kind benefit guarantee is in Midwestern states at $159 per month, or 26 percent of the combined benefit guarantee; however, Northeastern states had the greatest increase in monthly in-kind transfers, from $67 to $177. Incorporating in-kind transfers reveals sizable differences across regions in the incentives for non-working households to enter the labor force and in defraying TANF work requirement costs for households with no earned income.

B. Child-Only Penalties

Table 3 shows the average cash child-only penalty by number of children between 2000 and 2016. For a two-child household, the child-only penalty averages $75 per month, or 17 percent of the cash effective benefit guarantee available. The child-only penalty decreases as more children are added to the household, with two- and four-person households facing

Table 3

TANF Effective Child-Only Penalties

	Cash			Cash + In-Kind		
	One Child	Two Children	Three Children	One Child	Two Children	Three Children
2000	128	92	77	171	172	172
2001	116	83	66	163	173	174
2002	118	81	67	169	187	185
2003	113	82	68	162	183	185
2004	111	83	70	161	177	191
2005	1106	81	70	155	171	184
2006	108	83	71	154	171	190
2007	108	81	70	154	177	194
2008	98	68	51	149	182	189
2009	104	76	60	164	194	205
2010	101	69	53	170	198	212
2011	95	71	58	157	193	209
2012	94	69	54	158	190	200
2013	93	67	56	151	182	196
2014	91	62	50	147	171	186
2015	94	66	57	147	169	182
2016	92	65	52	142	163	175
Total	104	75	62	157	180	190

Notes: This table presents national average TANF effective child-only penalties using Equations (1) and (2), estimated separately using either cash-only or combined cash + in-kind transfer benefits. Dollar values are in constant 2016 dollars.
Source: NTDS microdata.

$104 and $62 child-only penalties, or 28 and 12 percent of their effective benefit guarantees. As the child-only penalty reflects the cost of fulfilling the work requirement, the penalty decreasing with more children may reflect a lowered work expectation for single mothers raising more children. Including in-kind transfers in the benefit guarantee more than doubles the average child-only penalty to $180, 32 percent of the combined benefit guarantee. As TANF uses work-related in-kind transfers, child-only cases losing the bulk of their in-kind transfer guarantee are in line with adults losing TANF eligibility due to work inactivity, through either disability or violating work requirements, but is more costly to long-term low-wage parents who lose eligibility for TANF exceeding time limits.

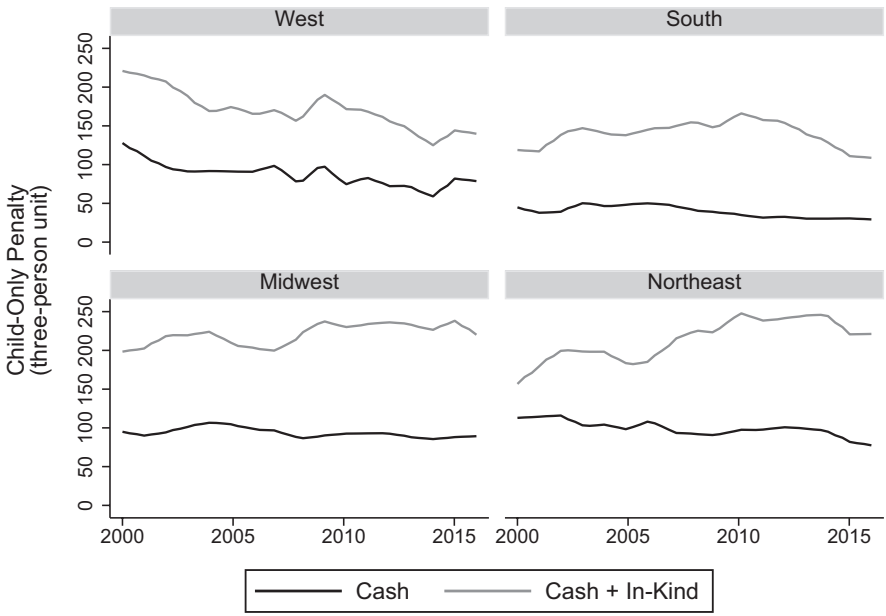
Between 2000 and 2016, the cash child-only penalty for a three-person household fell by $27 while hovering around 17 percent of the effective benefit guarantee. Including in-kind transfers, the child-only penalty falls only by $9 and rises as a fraction of the benefit guarantee from 28 percent to 32 percent.

Trends in child-only penalties vary greatly by region, as Figure 5 shows. Midwestern and Northeastern states have the highest average child-only penalties, at $93 and $99 for cash benefits and $221 and $213 for cash plus in-kind benefits. Southern states have the lowest child-only penalty, averaging just $39 of cash benefits, or 13 percent of their average benefit guarantee.

Measuring TANF child-only penalties provides an interesting glimpse at TANF priorities. By segmenting benefit schedules based on adult eligibility, TANF has chosen to reward the working, temporarily poor, single-parent citizens relative to either those who cannot or will not work, the long-term poor, or non-citizens. A caveat is that, while TANF penalizes disabled households, this penalty is more than offset by the SSI program, which targets low-income disabled individuals and provided a benefit guarantee of $733 in 2016.

Figure 5

TANF Child-Only Penalties by Region: 2000–2016



Notes: Average TANF child-only penalty for a three-person household by region. Child-only penalty calculated as the difference between the single-parent effective benefit guarantee for a two-child household and the child-only effective benefit guarantee for a two-child household, for both cash and cash + TANF in-kind transfers.
Source: NTDS microdata.

C. Tax Rates

Columns (4) and (6) of Table 2 show that effective earned and unearned income cash benefit tax rates averaged 12 percent and 9 percent between 2000 and 2016 with little variation over time. These tax rates are considerably lower than historical AFDC tax rates, which McKinnish, Sanders, and Smith (1999) estimated to be near 40 percent in the mid-1980s, and they continue the trend in tax rate reductions following TANF's introduction documented by Ziliak (2007). The continued decline of TANF earned income tax rates helps mitigate the large reduction in benefit guarantees for single parents in the labor force.

When including in-kind transfers (Column (7)), unearned income tax rates remain unchanged. However, for earned income tax rates (Column (5)), including in-kind transfers, the tax rates are decreased by 14 percentage points, resulting in a slight subsidy. This means that TANF in-kind transfers not only represent a significant portion of the benefit guarantee for single-parent cases, but these transfers increase with earned income and direct more benefits to working parents. Tying greater subsidized child care to increased income helps to offset work-related costs associated with TANF work requirements. The efficacy of subsidized child care remains unclear as the average monthly earnings of working parents receiving child care benefits are $961, only 25 percent greater than the average child care subsidy amount. The net social welfare from subsidizing child care for meager earnings relative to providing greater cash benefits for non-working parents ultimately depends on the weighting of child versus parental utility, parental caretaking abilities relative to child care workers, and the labor market returns to work experience for the parent.

Large variation exists across census regions in the level and trends of TANF earned and unearned income tax rates. Figures 6 and 7 display effective earned and unearned income tax rates on cash benefits and cash plus in-kind transfers by region. While Southern states have the lowest benefit guarantee levels, they also have the lowest earned income tax rates, averaging 4 percent and dropping to –6 percent when in-kind transfers are included. Northeastern states experienced the largest reduction in earned income tax rates over this period, with rates declining by 8 percentage points for cash benefits and by 17 percentage points when in-kind transfers are included. Only in Midwestern states did earned income tax rates increase over this period, from 4 percent to 15 percent. Unearned income tax rate regional trends for both cash and cash plus in-kind transfers closely follow those of earned income tax rates for cash benefits over this time period.

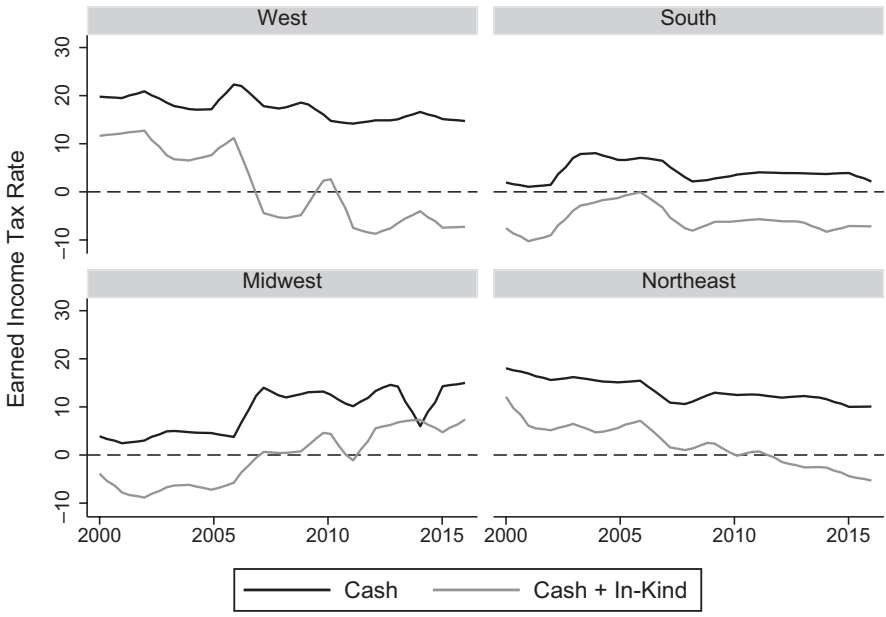
VI. DISCUSSION

To help understand the changing TANF landscape during the past two decades, this study estimated effective cash and in-kind transfer benefit guarantees, child-only penalties, and earned and unearned income tax rates.

One consistent theme that emerged from these policies is increased work incentives among single mothers. In providing the first policy estimates that include TANF work-related in-kind transfers, I find that these transfers now comprise a quarter of the benefit guarantee for single-parent cases, averaging $132 per month. Additionally, the low earned income tax rates, near 10 percent, similarly encourage work more than

Figure 6

TANF Effective Earned Income Tax Rates by Region: 2000–2016



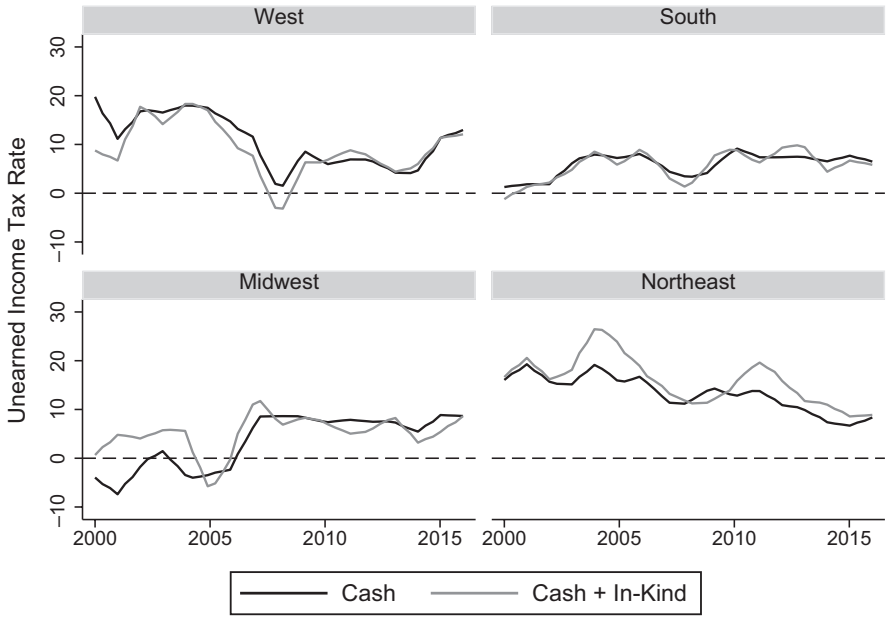
Note: Average effective TANF earned income tax rates, by region, for both cash and cash + TANF in-kind transfers.
Source: NTDS microdata.

the 40 percent AFDC effective tax rates in the mid-1980s and are far lower than the "thirty-and-a-third" rule from 1967, which had a statutory income tax rate of 67 percent. When in-kind transfers are included, this tax rate drops considerably and results in most states subsidizing earned income with in-kind transfers such as subsidized child care and transportation benefits. In effect, this means TANF has become a complement to the earned income tax credit in relation to work incentives. Combined, these work incentives lower the cost of TANF work requirements and may help some families reduce lifetime TANF dependency by increasing labor force attachment and income.

However, those labor force gains come at a cost. To encourage work, benefits are shifted away from families who may have difficulty finding work. Increased work among single parents also lowers parental interaction with their children. The emphasis on single-parent work is a stunning reversal from the intentions of the original Aid to Dependent Children program, which was primarily created so that single mothers could raise children without needing labor market earnings.

Figure 7

TANF Effective Unearned Income Tax Rates by Region: 2000–2016



Note: Average effective TANF unearned income tax rates, by region, for both cash and cash + TANF in-kind transfers.
Source: NTDS microdata.

I also find that average effective TANF benefit guarantees have fallen 22 percent since 2000, with considerable cross-region variation, matching similar changes in statutory benefit levels. In most states, this decline has severely lowered the income and consumption level for TANF households and may have contributed to the plunge in caseloads during this period. The continued deterioration of benefits for non-disabled non-working single-parent families has important implications for policymakers. For instance, the combination of lower benefits, income eligibility thresholds, a higher minimum wage, and a 20-hour per week work requirement could lead to an eligibility Catch-22, whereby the minimum income generated from meeting work requirements disqualifies a household from TANF benefits.

Last, I find that the effective child-only penalty averages $75 per month for cash benefits and $180 per month for cash plus in-kind benefits and decreases with more children. Future work considering the effect child-only penalties have on the caseload duration, rules compliance, and household well-being seems particularly interesting.

Perhaps the most significant question regarding TANF is the causes and consequences of the continued decline of welfare participation since 2000. This decline occurred during a period that saw minimal federal TANF legislation and during the largest economic recession since the Great Depression, indicating that the decline is more likely driven by TANF supply factors as opposed to demand. These supply factors could include a growing importance of policy enforcement and discretion, binding time limits, or reduced benefits. These are important questions for researchers to pursue in order to help improve the future of TANF.

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REFERENCES

Bitler, Marianne, and Hilary Hoynes, 2016. "The More Things Change, the More They Stay the Same? The Safety Net and Poverty in the Great Recession." *Journal of Labor Economics* 34 (S1), S403–S444.

Bitler, Marianne P., and Hilary W. Hoynes, Fall 2010. "The State of the Social Safety Net in the Post–Welfare Reform Era." *Brookings Papers on Economic Activity*.

Danielson, Caroline, and Jacob Alex Klerman, 2008. "Did Welfare Reform Cause the Caseload Decline?" *Social Service Review* 82 (4), 703–730.

Falk, Gene, 2010. *The TANF Emergency Contingency Fund*. CRS Report R41078. Congressional Research Service, Washington, DC.

Fraker, Thomas, Robert Moffitt, and Douglas Wolf, 1985. "Effective Tax Rates and Guarantees in the AFDC Program, 1967-1982." *Journal of Human Resources* 20 (2), pp. 251–263.

Frogner, Bianca, Robert Moffitt, and David Ribar, 2009. "Income, Employment, and Welfare Receipt after Welfare Reform: 1999-2005 Evidence from the Three-City Study." Working Paper No. 09-03. Johns Hopkins University, Baltimore, MD.

Golden, Olivia, and Amelia Hawkins, 2012. *TANF Child-Only Cases*. Temporary Assistance for Needy Families Program—Research Synthesis Brief Series No. 3. The Urban Institute, Washington, DC.

Grogger, Jeffrey, Steven J. Haider, and Jacob Klerman, 2003. "Why Did the Welfare Rolls Fall during the 1990's? The Importance of Entry." *American Economic Review* 93 (2), 288–292.

Grogger, Jeffrey, and Charles Michalopoulos, 2003. "Welfare Dynamics under Time Limits." *Journal of Political Economy* 111 (3), 530–554.

Haider, Steven J., and Jacob Alex Klerman, 2005. "Dynamic Properties of the Welfare Caseload." *Labour Economics* 12 (5), 629–648.

Hutchens, Robert M., 1978. "Changes in AFDC Tax Rates, 1967-1971." *Journal of Human Resources*, 60–74.

Klerman, Jacob Alex, and Steven J. Haider, 2004. "A Stock-Flow Analysis of the Welfare Caseload." *Journal of Human Resources* 39 (4), 865–886.

Lurie, Irene, 1974. "Estimates of Tax Rates in the AFDC Program." *National Tax Journal* 27 (March), 93–111.

Lynch, Karen E., 2012. *Social Services Block Grant: Background and Funding*. Congressional Research Services, Washington, DC.

Lynch, Karen E., 2016. *Trends in Child Care Spending from the CCDF and TANF*. Congressional Research Services, Washington, DC.

Mazzolari, Francesca, and Giuseppe Ragusa, 2012. "Time Limits: The Effects on Welfare Use and Other Consumption-Smoothing Mechanisms." Technical Report, Institute for the Study of Labor (IZA), Bonn, Germany.

McKinnish, Terra, Seth Sanders, and Jeffrey Smith, 1999. "Estimates of Effective Guarantees and Tax Rates in the AFDC Program for the Post-OBRA Period." *Journal of Human Resources* 34 (2), pp. 312–345.

Parrott, Sharon et al., 2007. *Implementing the TANF Changes in the Deficit Reduction Act: "Win-Win" Solutions for Families and States*. Center of Budget and Policy Priorities and Center for Law and Social Policy, Washington, DC.

Schmidt, Lucie, Lara Shore-Sheppard, and Tara Watson, 2016. "The Effect of Safety-Net Programs on Food Insecurity." *Journal of Human Resources* 51 (3), 589–614.

Schott, Liz, LaDonna Pavetti, and Ife Finch, 2012. *How States Have Spent Federal and State Funds under the TANF Block Grant*. Center on Budget and Policy Priorities, Washington, DC.

Ziliak, James P., 2007. "Making Work Pay Changes in Effective Tax Rates and Guarantees in US Transfer Programs, 1983–2002." *Journal of Human Resources* 42 (3), 619–642.

Ziliak, James P., 2015. "Temporary Assistance for Needy Families." In Moffitt, Robert A. (ed.), *Economics of Means-Tested Transfer Programs in the United States, Volume 1*, 303–393. University of Chicago Press, Chicago, IL.

Ziliak, James P., David N. Figlio, Elizabeth E. Davis, and Laura S. Connolly, 2000. "Accounting for the Decline in AFDC Caseloads: Welfare Reform or the Economy?" *Journal of Human Resources* 35 (3), 570–586.

APPENDIX: PANEL ESTIMATION

A concern in estimating effective TANF tax rates and benefit guarantees using OLS is that unobserved family characteristics may correlate with earned or unearned income. For example, if households receiving unemployment benefits are more likely to violate TANF policies and be sanctioned, then the estimated unearned benefit tax rate will be greater than the benefit policy.

Beginning with 2012 universal TANF caseload reporting in 29 states allows me to create panel data of TANF households between 2012 and 2016. Using this panel data, I can estimate tax rates and benefit guarantees using a household fixed-effects model that uses within-household changes to identify model parameters. Household identifiers are not explicitly included in the NTDS data; I construct the panel data using household zip code, date of birth and race of household head, and first child date of birth to create a household ID variable. Combining these variables creates a high level of uniqueness; only 0.4 percent of the sample contains a duplicate of this variable set in any month. Observations in 2015 are dropped because they do not include zip code information. Because zip code is used to identify households, I am unable to follow households when they move out of a zip code.

To estimate effective benefit guarantees and tax rates, I run the following household fixed-effects model (FE):

$$\text{(A1)} \quad Y_{ist} = \alpha^0_{st} + \alpha^1_{st}\,\text{Child2}_{ist} + \alpha^2_{st}\,\text{Child3}_{ist} - t^e_{st}\,\text{Earned}_{ist} - t^{un}_{st}\,\text{Unearned}_{ist} + \delta_i + \varepsilon_{ist}$$

which is equivalent to Equation (3) but includes a household fixed effect, δ_i. Parameters in Equation (A1) are identified by within-household changes to the number of children, earned and unearned income, and the corresponding changes to TANF benefit amount.

Table A1 presents 2012–2016 average state-level estimates of α^1_{jt}, t^e_{jt}, and t^{un}_{jt} using the fixed-effects estimates from Equation (A1) compared to analogous OLS estimates from Equation (3). The estimated parameters for the OLS and fixed-effects model are similar, with the average difference for earned income tax rates at 3.7 percent, for unearned income tax rates at 3.1 percent, and for the second child benefit increase at $1.50. The mean absolute deviations for earned and unearned tax rates are 4.5 and 4.1, respectively, and $16 for the second child benefit. For some states, there is a sizable difference between the OLS and fixed-effects estimates, but overall, the variation by estimation method is small.

Ziliak 2007 Comparison

Figure A1 compares Ziliak (2007) estimates to this project's estimates of effective benefit guarantees for three-person assistance units and earned income tax rates for the overlapping period 2000–2002. Overall, the estimates are very similar. The correlation between effective benefit guarantee estimates is 0.99 and for earned income tax rates is 0.96. Average effective benefits for this paper are 5 percent higher than Ziliak (2007) and earned income tax rates are 1 percentage point higher.

Table A1

Comparison of Earned and Unearned Tax Rates and Second Child, FE versus OLS

	(1) Earned FE	(2) Earned OLS	(3) Unearned FE	(4) Unearned OLS	(5) Second Child FE	(6) Second Child OLS
Alabama	0.2	–0.1	2.9	6.3	18.3	26.2
Alaska	22.3	23.3	27.0	31.9	73.4	103.3
Arizona	–1.2	–3.2	0.5	–0.7	48.5	50.3
Delaware	1.2	2.9	4.5	2.6	41.3	52.5
Washington, DC	17.0	18.9	5.9	29.3	69.7	67.8
Georgia	0.2	1.8	3.4	10.1	33.8	39.3
Hawaii	10.7	13.9	–32.6	–28.2	92.5	62.4
Idaho	2.1	3.2	–1.6	1.2	17.7	–2.5
Indiana	3.3	3.5	3.4	7.8	16.8	39.7
Iowa	6.0	12.5	–0.3	1.0	69.5	58.6
Kentucky	3.6	6.1	0.2	0.2	34.6	35.0
Louisiana	1.2	1.4	2.7	4.3	47.0	49.7
Maine	6.3	9.5	2.7	1.9	81.7	93.9
Minnesota	4.3	8.6	2.3	10.8	71.4	43.4
Missouri	13.7	12.9	4.7	7.0	11.7	62.1
Montana	7.4	9.3	0.9	1.8	100.4	93.2
Nebraska	12.3	14.8	1.7	1.7	77.3	64.4
New Hampshire	10.8	13.3	5.8	9.3	86.6	58.6
New Jersey	9.8	12.5	2.1	2.6	82.1	69.1
North Dakota	5.0	5.3	3.4	7.6	50.3	54.9
Oklahoma	16.8	15.3	1.6	4.7	29.1	53.5
Oregon	45.5	114.0	7.9	9.2	64.5	69.2
Rhode Island	11.9	17.3	3.5	6.2	78.7	91.9
Tennessee	1.8	1.8	0.6	0.2	38.4	39.4
Utah	9.9	5.2	11.7	13.5	109.4	131.4
Vermont	15.8	20.5	8.2	21.1	120.7	84.9
Virginia	–1.5	–1.7	–1.5	–0.5	58.3	55.4
Washington	16.5	16.6	0.8	–0.08	82.7	81.1
Wisconsin	7.7	9.8	–0.7	–1.8	–14.0	8.2
Total	9.0	12.7	2.5	5.6	58.4	59.9
Observations	116	116	116	116	116	116

Notes: Comparison of earned and unearned TANF benefit tax rates and second-child benefit levels, 2012–2016, using fixed-effects and OLS estimation (excluding 2015). The sample consists of the 29 states that universally report monthly TANF caseloads.
Source: NTDS microdata.

Table A2

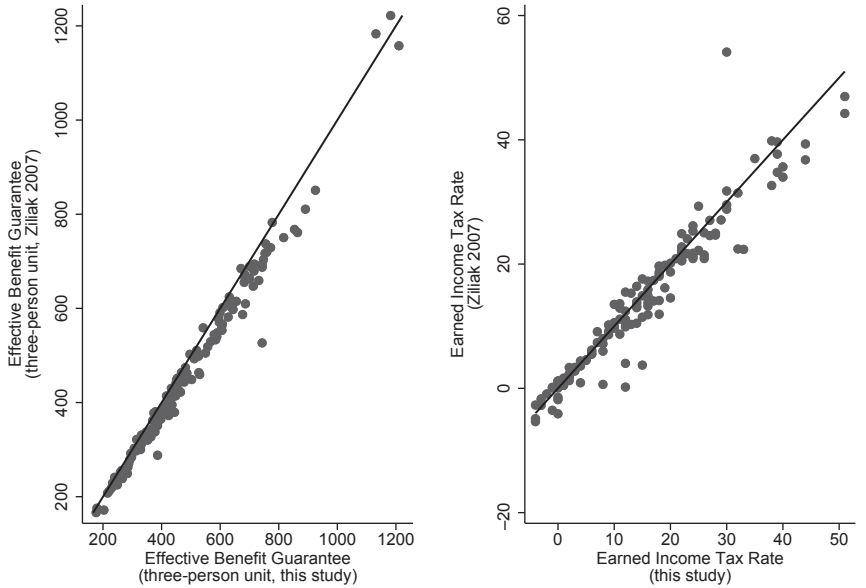
TANF Unearned Income Including SNAP Tax Rates by Region, 2000–2016

	(1) 2000–2003	(2) 2004–2007	(3) 2008–2011	(4) 2012–2016	(5) All
West	0.18	1.05	–1.75	–0.86	–0.38
South	–4.62	–1.11	–1.69	0.21	–1.68
Midwest	–10.6	–8.61	–2.47	–3.85	–6.23
Northeast	2.77	–0.99	–3.63	–2.23	–1.09
Total	–3.50	–2.32	–2.23	–1.45	–2.32
Observations	203	201	204	255	863

Notes: Average estimated unearned income tax rates by region including SNAP benefits. Unearned income is comprised of SNAP benefits, worker's compensation, child support, SSI, Social Security, unemployment benefits, and other unearned income.
Source: NTDS microdata.

Figure A1

Comparison of Effective Benefit Guarantees and Earned Income Tax Rates to Ziliak (2007)



Note: Comparison of findings for effective benefit guarantee and earned income tax rates between this project and Ziliak (2007).
Source: NTDS microdata.