Optimal Welfare Policy: Lessons from U.S. Welfare Reforms

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Abstract

Over the past 20 years several poicies aimed at increasing the labor force participation of single mothers and reducing dependancy on welfare-type transfers. I develop theory to design optimal welfare policy for single mothers when maternal employment affects children outcomes. Aggregate welfare is not maximized by setting policy to equalize marginal utility across individuals, instead work disincentives provided by transfers to the non-working drive a wedge between marginal utilities at the optimum. The magnitude of the wedge depends not only on the labor supply elasticity, but also on the size and direction of the effect on children of maternal employment. I estimate relevant parameters using data from the National Longitudinal Survey of Youth and variation in state and federal tax law. Tax laws create substantial variation in work incentives across states and time. I use these exogenous shocks to work incentives to directly estimate labor supply elasticities. To deal with the potential selection bias when estimating maternal employment effects on children, I use the tax law variation as an instrument for labor force participation.

Introduction

In societies that have preferences for redistribution or some degree of equality, tax and transfer programs are often the main tool to attain these goals. Taxing high income individuals to fund cash or in-kind transfers to lower income individuals directly addresses issues of inequality. A drawback, however, is these policies often create incentives that discourage work participation. When transfers to a non-working individual approach their earnings potential, or when individuals with low earnings potential face high effective marginal tax rates due to transfer policy phaseout, rational individuals will often choose not to work even when work opportunities exist.

Increasing the labor force participation of working age adults while ensuring at least a minimum level of consumption is typically considered a positive development. Employment can be empowering and diminish reliance on the government for well being. If the analysis ended here, the conclusion would be to seek policy that increases labor force participation while preserving consumption. However single mothers, often the target for welfare policies, are faced with a unique set of trade-offs. Consider a

single mother with a young child; one option she could pursue would be to enter the labor force. If she finds work she may be able to maximize her income which could have positive impacts on both her and her child, and may even have positive external effects through a larger tax base. Furthermore a working mother could conceivable induce her child to seek employment later in life. On the other hand, if the mother decides to find work, she will have less time to raise her child. She will have to find other ways to care for her child while at work. This may involve other family members or friends, the quality of such care is likely quite variable. Alternatively she could find day care which is often expensive, cutting into the benefits of increased family income. If the mother chooses not to participate in the labor market, she may be able to provide child care of higher quality than her outside option. Therefore the optimal work arrangement for a single mother in an intergenerational model is ambiguous, staying home and raising her child could very well result in better outcomes than working, receiving earnings and finding alternative child care arrangements.

Historically the intergenerational effect of welfare policy on children has not been a significant part of the welfare policy debate as illustrated by the following example. Prior to 1996, in the United the Aid to Families with Dependent Children (AFDC) made up the bulk of what was often referred to as welfare. Created as a part of the Social Security Act of 1935, AFDC provided cash payments most often to low-income single mothers. Between 1970 and the mid-1990s, 4.5 to 5.5 percent of the United States population depended on AFDC payments that totaled approximately $25 to 32 billion[1]. Critics of AFDC suggest that the program creates a strong disincentive for mothers to join the workforce. For example using individual level AFDC Quality Control data, McKinnish, Sanders and Smith (1999) estimate effective tax rates of 35 to 40% for AFDC recipients over the years 1988-1991. These tax rates exceed the top marginal tax rates of 28-31 percent over these same years[2]. As a result, employment rates measured less than 60 percent among single mothers aged 16 to 44 between 1992 and 1995 in the Current Population Study (CPS).

Partially as a response to the low employment participation of AFDC eligible individuals, the United States government passed the Personal Responsibility and Work Opportunity Reconciliation Act in 1996 (PRWORA). PRWOA replaced AFDC with Temporary Assistance for Needy Families, a program that created time limits and work requirements for many single mothers seeking assistance. Stated goals of the PRWOA legislation include "end[ing] the dependence of needy parents on government benefits by promoting job preparation, work, and marriage".[3] In the 5 years following the passage of PRWOA, the number of families receiving income assistance fell from 4.5 million to 2.2 million. Welfare reform was largely perceived as a success as caseloads fell while consumption levels remained constant or perhaps even increased (Meyer and Sullivan 2004, 2008) through the early 2000s. However

[1]Department of Health and Human Services, Indicators of Welfare Dependence Annual Report to Congress 2008. Accessible at http://aspe.hhs.gov/hsp/indicators08/

[2]http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=543

[3]Personal Responsibility and Work Opportunity Reconciliation Act of 1996. Accessible at http://www.gpo.gov/fdsys/pkg/PLAW-104publ193/html/PLAW-104publ193.htm

evaluations of the PRWOA tend to ignore potential effects of maternal employment on children, except through income channels.

In this paper I will study optimal welfare policy when one considers the effects of maternal employment on her child. I will begin by reviewing literature covering optimal welfare as well as maternal employment effects on children. I will that develop theory of optimal welfare to study policy that accounts for maternal employment effects. Then I will take the model to the data and estimate parameters important to optimal welfare policy developed in the theory section.

Literature

This paper integrates the effects of maternal employment into a model of optimal welfare policy. Perhaps the most obvious effect of maternal employment is the potential for increased family income. Increased income could mean better nutrition, more resources, reduced paternal stress and other positive benefits for the children in the home. Using data from the National Longitudinal Survey of Youth (NLSY) and exploiting changes in the Earned Income Tax Credit (EITC) as an instrument for income, Dahl and Lochner (2012) estimate that an income increase of $1,000 per year contemporaneously raises math-reading achievement scores by 6 percent of a standard deviation, with disadvantaged children responding to a greater degree than children from higher socioeconomic backgrounds. Duncan (2011) reaches similar conclusions when studying seven random assignment experimental studies in the US and Canada. Specifically, a $1,000 increase in annual income increases various children's achievement measures by 5-6% of a standard deviation. Furthermore, deep or persistent poverty early in a child's development adversely affects subsequent achievement (Ducan & Brooks 2000). However a consensus on the positive effect of income on child development has not been reached. Blau (1999) concludes that NSLY data show that current income has little to no effect on child outcomes, and while permanent income has effects on child development, they are too small to make income transfers a feasible approach to achieving substantial improvements.

Substantial literature exists on the effect of maternal employment and findings are somewhat inconsistent. While find little effects on children from the 1996 PRWOA legislation that encouraged employment among single women (Chase & Landsdale 2005), many others document significant modest negative effects of maternal employment, especially early in the child's life (Bernal 2008, Desai, Landsdale & Michael 1989, Ermisch & Franscesconi 2012, Milne et al. 1986, Rhum 2004). Some go so far as to describe the effect of maternal employment during a child's first year of birth on cognitive and behavioral outcomes as "detrimental" (Baum 2003, Baydar & Brooks-Guunn 1991). Many of these studies may suffer from selection bias, that is mothers who work may be different in unobserved ways that also affect their children's outcomes.

To my knowledge there are three papers that employ an instrumental variables technique to circumvent the selection problem. James-Burdumy (2005) uses county level percentage of labor force

working in the service industry as an instrument. However the first stage is quite weak and therefore conclusions from the paper are based on fixed effects results suggesting modest negative effects from maternal employment during the child's first year of life. Blau & Grossman's (1992) specification also suffered from weak instruments and concluded from OLS estimates that maternal employment during the first year had a negative effect on child outcomes which is offset by positive effects from maternal employment in years two and three of a child's life. In the paper most similar to the empirical work I present, Bernal & Keane (2012) use a series of plausibly exogenous welfare legislative changes that affect labor force participation to conclude that a year of child care (as opposed to the mother raising the child) reduces child test scores by 2.1%.

These two strands of literature suggest that the work choices a mother makes affects her child's cognitive and behavioral outcomes contemporaneously and perhaps over the next several years. This is important from an intergenerational welfare standpoint because ability gaps between advantaged and disadvantaged children open early in life and are persistent. Rates of return on human capital investment is highest during the pre-school years (Heckman 2006). Furthermore about half of the inequality in the present value of lifetime earnings is due to factors determined by age 18 (Cunha & Heckman 2008). Therefore, if the goal of welfare policy is to maximize welfare intergenerational, one cannot dismiss the effects that inducing maternal employment has on children. However theoretical literature on optimal welfare (Besley & Coate 1992, 1994) and optimal welfare-to-work structures (Pavoni & Violante 2007, Pavoni, Setty & Violante 2013) remain silent on the maternal employment effects on children.

Theory of Optimal Unemployment Insurance

Model

Optimal Welfare without child effects

In this section I loosely base a theory of optimal welfare designed for single mothers developed in the unemployment insurance literature (see Baily 1978 and Chetty 2006). A unit mass of mothers maximize a utility function by choosing labor force participation on the extensive margin. Each mother has one child. If a mother chooses to enter the labor market they find a job with certainty, work full time and earn wage w. If they choose not to work then they receive transfer payment b from the government. Since the children are unaffected by the mothers work choice, the child will always receive consumption level c. The transfer benefits to the non-working is funded by a lump sum tax τ on each working individual. Mothers are heterogenous in their distaste for work. Specifically, if an individual chooses to work they incur a utility cost χ_i drawn from a distribution $G(\cdot)$. Therefore the individual i solves:

$$\max_{L}(1-L)\cdot u(b)+L(v(w-\tau)-\chi_i)+y(c) \tag{1}$$

Where $L=1$ if the individual chooses to work and zero otherwise; $u(\cdot)$, $v(\cdot)$ and $y(\cdot)$ are utility functions for working mothers, non-working mothers and children respectively. I assume $u(\cdot)$ and $v(\cdot)$ are increasing and concave, and do not necessarily take the same functional form. The solution to the maximization problem is a threshold χ. The individual i will work if

$$\chi_i < v(w-\tau)-u(b) \equiv \chi^*(\tau,b) \tag{2}$$

Therefore the mass of workers is $G(\chi^*(\tau,b))$ while the mass of non-workers is equal to $1-G(\chi^*(\tau,b))$.

The government maximizes aggregate utility subject to a budget constraint: transfer payments must be financed through tax revenue. Therefore the government's problem is to maximize

$$\max_{\tau,b} W=(1-G(\chi^*(\tau,b)))\cdot u(b)+\int_{\underline{\chi}}^{\chi^*(\tau,b)} v(w-\tau)-\chi dg(\chi)+y(c) \tag{3}$$
$$s.t.\ BC:\ (1-G(\chi^*(\tau,b))\cdot b=G(\chi^*(\tau,b))\cdot\tau$$

The budget constraint defines the tax rate τ required to fund benefit level b and thus defines an implicit function $\tau=\tau(b)$. Substituting the function $\tau(b)$ in for τ in the maximization problem, the government chooses benefit level b to maximize

$$\max_{b} W=W=(1-G(\chi^*(b)))\cdot u(b)+G(\chi^*(b))\cdot v(w-\tau(b))-\underbrace{\int_{\underline{\chi}}^{\chi^*(b)}\chi dg(\chi)}_{X(b)}+y(c) \tag{4}$$

Where $X(b)$ is the aggregate distaste for work amongst those that choose to work, given b and τ. The first order condition for the maximization of the welfare function is defined by taking the derivative of the welfare function with respect to b and setting the result equal to zero.

$$\frac{dW}{db}=(1-G(\chi^*))\cdot u'-G(\chi^*)v'\underbrace{\left(\frac{1-G(\chi^*)}{G(\chi^*)}-b\frac{dG(\chi^*)}{db}\cdot\frac{1}{G(\chi^*)^2}\right)}_{\frac{d\tau}{db}}+\frac{dG(\chi^*)}{db}\underbrace{\left(v-u-\frac{dX}{db}\right)}_{=0}=0 \tag{5}$$

The last term is equal to zero; the value of work distaste for the marginal worker, $\frac{dX}{db}$ must be equal to the utility gain from employment $v-u$. Letting $\frac{dG(\chi^*)}{db}\frac{b}{G(\chi^*)}=\eta_{G,b}$, the labor supply elasticity of benefit b and simplifying equation (5)

$$u'-v'=\frac{1}{(1-G(\chi^*))}(v'\cdot\eta_{G,b}) \tag{6}$$

If there were no work response to changes in b, the optimal welfare program is obtained by choosing b and τ such that the marginal utility for workers is equal to the marginal utility of non-workers. The labor force elasticity of benefits drives a wedge between the marginal utilities at the optimum, the more responsive mothers are to changes in benefit levels the larger this wedge will be.

Optimal Welfare with child effects

Using the previous framework we can analyze how the solution changes when the work decision of the parent affects the child. Suppose child utility is $y(c)$ if the mother works and $y(c+t)$ if the mother does not work. Then t is positive if the child benefits from the mother staying home and raising the child. The mothers maximization problem becomes

$$\max_{L}(1-L)\left[u(b)+\delta\cdot y(c+t)\right]+L\left[(v(w-\tau)+\delta\cdot y(c)-\chi_i\right] \tag{7}$$

were δ is the degree to which the mother internalizes the work effect on the child, i.e. this is a general case where $\delta = 0$ is the example above. The solution to the maximization problem is again a threshold χ. Mother i will work if

$$\chi_i < v(w-\tau)-u(b)-\delta\left[y(c+t)-y(c)\right]\equiv\hat{\chi} \tag{8}$$

When $t>0$, $\hat{\chi}<\chi^*$ and vice versa and the mass of workers is $G(\hat{\chi})$.

The government maximized aggregate welfare fully internalizing the effect of maternal employment on children, thus the government solves

$$\max_{\tau,b} W = (1-G(\hat{\chi}(\tau,b)))\cdot(u(b)+y(c+t))+G(\hat{\chi})\cdot(v(w+\tau)+y(c))-\int_{\chi}^{\hat{\chi}(\tau,b)}\chi dg(\chi) \tag{9}$$

$$s.t.\ BC:\ (1-G(\hat{\chi}(\tau,b))\cdot b = (G(\hat{\chi}(\tau,b))\cdot\tau$$

Just as before, the budget constraint defines an implicit function $\tau=\tau(b)$ which we can substitute into the maximization problem. Taking the derivative with respect to b and simplifying defines a solution comparable to the above case

$$u'-v' = \frac{1}{1-G(\hat{\chi})}\left(\underbrace{v'\cdot\eta_{G,b}}_{disincentive\ wedge} + \underbrace{\frac{dG}{db}\left(y(c+t)-y(c)\right)}_{child\ development\ effect}\right) \tag{10}$$

The solution is similar to the previous section, with the addition of the last term that partially

offsets the work disincentive wedge when the effect of maternal child care, t, is positive. The intuition is straightforward, the labor force participation elasticity of benefits drive a wedge between optimal marginal utilities. When there are benefits to mothers not working, the government is better off encouraging more mothers to stay out of the labor force. This is achieved by increasing transfers, and utility, to the non-working decreases u' but increases the taxes and v' on the working.

Numerical Example

To illustrate results of this model I consider two cases and solve them numerically. In both cases I assume there is an effect of maternal employment on children. In the first case mothers do not internalize the effect of working on their children. In the second case the mothers fully internalize the effect of working on their children. In both cases I propose two solutions, one in which the government does not figure the children into the welfare maximization problem and the other solution assumes the government maximizes the sum of mothers and children welfare.

To solve the model I make various functional form and parametric assumptions. First I assume $u(\cdot) = v(\cdot) = y(\cdot) = \sqrt{x}$ for computational convenience, but also because it is increasing and exhibits diminishing marginal utility. I assume that $\chi \sim U[0, 1]$ and I make the following parameterizations:

- Wage: $w = 1$
- Initial child endowment: $c = 0.8$
- Marginal increase in child outcome due to maternal care: $t = 0.4$

Figure 1 depicts the solution for the case where mothers do not internalize the effect of working on their children. Panel (a) shows the decline in employment rate as tax rates increase. Panel (b) shows the maximum benefit level affordable at every tax rate. Notice that the function is initially increasing, as you increase the tax rate, revenues initially since the tax base (employment rate) is large while the mass of individuals receiving benefits is small. The benefit function peaks at a tax rate of 36 percent, at this point the tax base has declined to the point that marginal aggregate benefit payments exceed the marginal aggregate tax revenue. Since these mothers are not taking into account their children in the work decision, even those with the highest distaste for work ($i|\chi_i = 1$) are indifferent to working, and everyone else chooses to work with certainty. Panel (c) displays aggregate social welfare (children included) as a function of tax, and corresponding benefit rates. Panel (d) displays aggregate mothers welfare (children not included) as a function of the tax rate. The government that maximizes the sum of mothers and children welfare will implement a tax rate that maximizes the function in panel (c) while a government that does not consider the effect on children will maximize the function in panel (d).

Table 1 displays the solutions to the maximization problem when mothers do not internalize child effects of working. The first column shows the solution when the government maximizes the welfare

Table 1: Numerical Solutions when Mothers Do Not Internalize Child Effects

Government Maximizes Welfare of:	Mothers Only	Mothers and Children
τ	0.12	0.26
b	0.15	0.19
Employment	55%	42%
Mothers Welfare	0.538	0.526
Children's Welfare	0.985	1.011
Aggregate Welfare	1.523	1.537

of mothers only, while the second column displays results at the aggregate mother and child welfare maximum. The results are intuitive: if the government is concerned with maximizing mother welfare, tax and benefit rates will be lower than if the government is accounting for child welfare. The maternal employment effect is accounted for in the second column, resulting in higher benefit levels and more mothers staying home instead of working.

Figure 2 illustrates the solution for the case where mothers internalize the effect on their children of maternal employment. Notice that a smaller range of benefit levels are supportable under this scenario. Specifically, optimal benefit levels from before (0.15 and 0.19) are not attainable when mothers internalize effects of employment. To understand why this is the case consider panel (a). Even with benefit levels at zero, approximately 20 percent of mothers will not work, this is because for that population, the distaste for work is greater than the benefit that the child receives due to the mother not working ($\chi_i > y(c+t) - y(c)$). Women with χ_i in this range will not work regardless of tax and benefit rates. When the government is faced with 20 percent of mothers not working even at zero benefit levels, when the government increases taxes τ, marginal revenue will be lower due to the smaller tax base. Furthermore, the lower marginal revenue must be spread out amongst a larger benefit base. Therefore the value to the government of reallocation through a tax and transfer policy is reduced.

Table 2 displays the optimal policy variables when mothers internalize the effect of maternal employment. Again the first column of results displays the solution when the government maximizes only the mothers welfare. Since mothers are already taking into account the maternal employment effect on their children, many women will choose not to work even at very low benefit levels. Therefore optimal tax rates are much lower when mothers already internalize the effect of working because the value to increasing the tax rate is lower than before. Interestingly, this effect is large enough that aggregate welfare is actually lower when mothers internalize the effects of employment (Table 2) versus when they do not internalize these effects (Table 1).

Table 2: Numerical Solutions when Mothers Internalize Child Effects

Government Maximizes Welfare of:	Mothers Only	Mothers and Children
τ	0.05	0.17
b	0.06	0.11
Employment	53%	38%
Mothers Welfare	0.490	0.477
Children's Welfare	0.989	1.018
Aggregate Welfare	1.479	1.495

Empirical Evidence

Data/Methodology

The data I use come from several sources. The National Longitudinal Survey of Youth (NLSY79) contains panel data on a sample of respondents intended to be representative of the non-institutionalized civilian population in the United States in 1979. Individuals in the sample were born between 1957 and 1964. There is also a supplemental oversample of civilian Hispanic, Latino, black and economically disadvantaged nonblack/non-hispanic respondents. In 1986 an additional set of surveys began for the biological children of women in the NLSY79, including cognitive, socioemotional and physiological measures. The timing of these surveys is particularly convenient for this paper. Mothers in the NLSY79 were between the ages 32-39 in 1996 at the implementation of PRWOA. This provides a sizable sample of women with small children both before and after the policy changes of 1996.

I also use data from the Urban Institute's Welfare Rules Database and TRIM3[4] model to compile the welfare rules for each state and each year. State welfare programs vary along a number of metrics that affect a single mother's work decision. In general, as a single mother increases her earned income, the welfare (AFDC/TANF) benefits she qualifies for decreases. However, most states have an initial amount of earned income that can be disregarded before benefits decline. This disregard and the degree to which benefits decline with earned income vary across state and within-state across time.

Finally I use TAXSIM, which is a program that interfaces with STATA to determine taxes and transfers based on a number of demographics including number of children, marital status and state of residence. From these three data sources I identify the work incentives that single mothers face.

Two important work incentives along the extensive margin are the average effective tax rate[5] at the expected level of earning and the amount of income one can expect if not working. To illustrate the variation in these policy variables Figure 3 displays budget sets in three states computed to include federal and state taxes along with TANF benefits for a hypothetical single mother with two children.

[4]TRIM3 project website, trim3.urban.org

[5]Average effective tax rate at \$15,000 defined as $1 - \left(\frac{Income\ at\ \$15k - Income\ at\ \$0k}{\$15{,}000}\right)$, all in real terms. This is the average slope of the budget constraint between zero earnings and \$15,000 earnings.

A single mother in Georgia who does not work would receive about half as much income as the same mother in California or Connecticut. Despite similar zero-earning incomes in California and Connecticut, average tax rates are very different between the two states between approximately five thousand and fifteen thousand dollars of real earnings. These incentives vary substantially across time, state and number of children. Figure 4 shows the distribution of these two variables. Observations are at the state-year-number of children level. For example, a single mother of two children living in Georgia in 1998 would receive about five thousand dollars of income if she did not work, that hypothetical example is one observation in the histogram in Figure 4. Both the average effective tax rate and the income if not working measures provide a significant amount of variation in work incentives. To the extent that tax law is exogenously assigned to a women based on the state of residence and year of interview I can estimate labor supply elasticities.

Estimating maternal employment effects on children is less straightforward an exercise. Child cognitive and non-cognitive outcomes are likely confounded by non-observables also correlated with mothers work status, therefore standard OLS provides biased estimates of the employment effect. However, to the extent that tax and transfer laws create incentives that are assigned randomly to single mothers, the cross-state and time variation in work incentives provide both a valid and relevant instrument for mother's work status. Therefore I am able to obtain plausible estimates for labor supply elasticities and maternal employment effects on children, both of which are required to solve the theoretical model presented in the previous section.

Results

This section currently uses data from the the Current Population Study (CPS) to obtain some preliminary suggestive evidence of results I will explore in more detail when I obtain the NLSY data. I restrict the data to single mothers between the ages of 16-44 with at least one child and fewer than six children. Data are collapsed to the state-year-number of children cell. Table 3 displays summary statistics of the data. Figures 5-8 suggest that the policy incentives (average effective tax rate and income at zero earnings) may be exogenous. These figures plot various demographic measures at the state-year cell level against the work incentives created by the state's welfare policy for single mothers. Each point on the scatter plot displays the mean measurement of single women ages 16-44 with exactly one child in a given state-year cell. If policy is exogenous to the demographics of the state there should be no correlation observed in these figures. This is the case for age, years of education and high school graduation rates. Figure 9 displays plots the percent of single women that are non-white against the work incentives. There exhibits a clear correlation. States with higher proportions of non-white (conditional on being a single mother) individuals tend to exhibit both lower effective tax rates and lower income for zero-earners.

Assuming these policy variables are indeed exogenous I can then estimate employment elasticities

Table 3: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
(mean) edu_yrs	12.248	0.932	2	18	4235
(mean) age	32.992	2.029	19	42.5	4235
(mean) emp_ind	0.638	0.21	0	1	4235
(mean) nilf_ind	0.274	0.193	0	1	4235
(mean) unemp_ind	0.089	0.099	0	1	4235
(mean) nonwhite	0.389	0.291	0	1	4235
(mean) hisp	0.132	0.191	0	1	4235
(mean) hsDrop	0.23	0.196	0	1	4235
(mean) hsGrad	0.373	0.18	0	1	4235
(mean) bachelor	0.067	0.077	0	1	4235
(mean) avgtax	0.188	0.173	-0.421	0.68	4220
(mean) incTot_0_real	6890.981	2981.775	1540.257	21629.496	4220
(mean) incTot_15k_real	19061.879	3037.481	14811.886	31490.473	4223
Num. of Children (minors only)	2.953	1.398	1	5	4235

from the CPS data. Table 4 shows the results of a simple OLS regression of average effective tax rates on employment levels among single mothers. When no demographic (column 1) controls are included in the regression specification I estimate a small nonsignificant effect from the work incentives. When demographic controls are added to year and number of children fixed effects (column 2) the estimate of the work incentives becomes negative and significant. Finally when only using within-state variation in policy (column 3) I still estimate a negative and significant labor participation effect from higher average effective taxes.

Table 4: Effect of Work Incentives on Employment Rates among Single Mothers

	(1) (mean) emp_ind	(2) (mean) emp_ind	(3) (mean) emp_ind
(mean) avgtax	-0.065 (0.018)**	-0.13 (0.018)**	-0.075 (0.032)*
(mean) age		0.013 (0.0014)**	0.013 (0.0014)**
(mean) hisp		0.010 (0.016)	-0.0011 (0.023)
(mean) nonwhite		-0.063 (0.011)**	-0.038 (0.017)*
(mean) edu_yrs		0.047 (0.0037)**	0.038 (0.0037)**
Num. Kids FE	Yes	Yes	Yes
Yr FE	Yes	Yes	Yes
St FE	No	No	Yes
Observations	4220	4220	4220
R^2	0.246	0.313	0.361

Observations are State-Year-Number of Children cells. (* P<.05, ** P<.01)

Figures

Figure 1: Numerical Solution when Mothers Do Not Internalize Child Effects

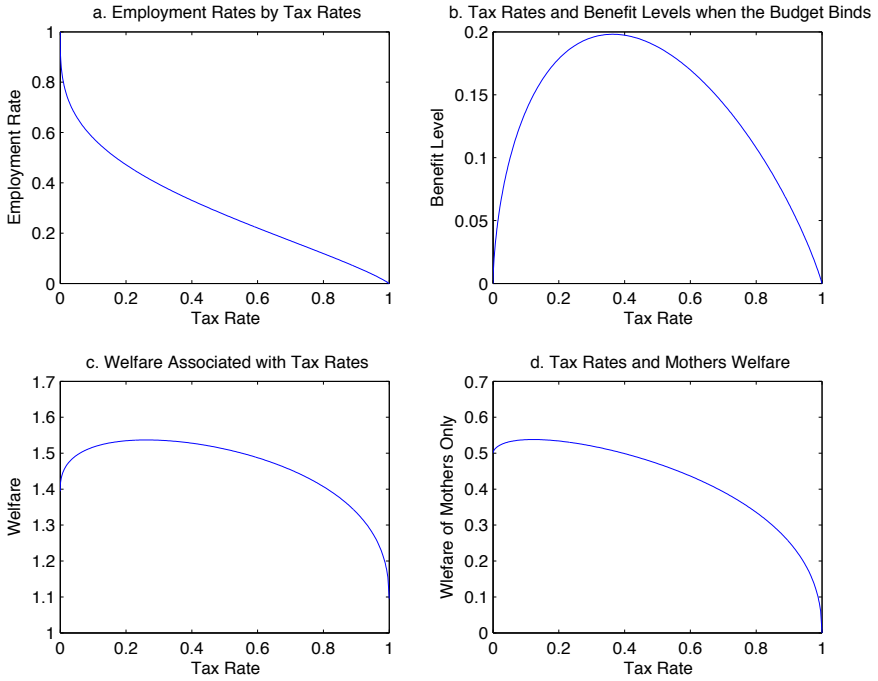

Figure 2: Numerical Solution when Mothers Fully Internalize Child Effects

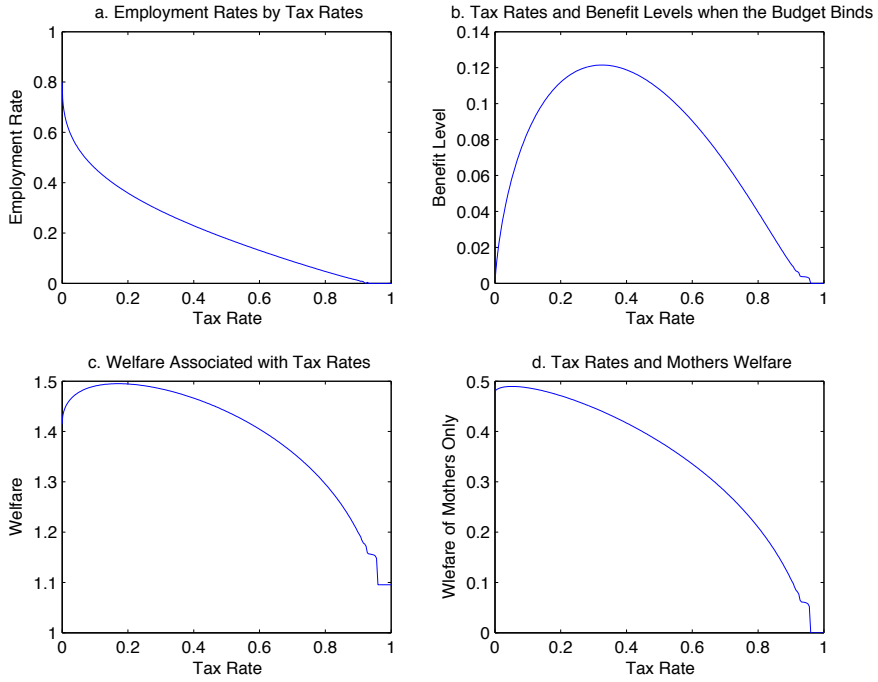

Figure 3: Computed Budget Sets for Selected States

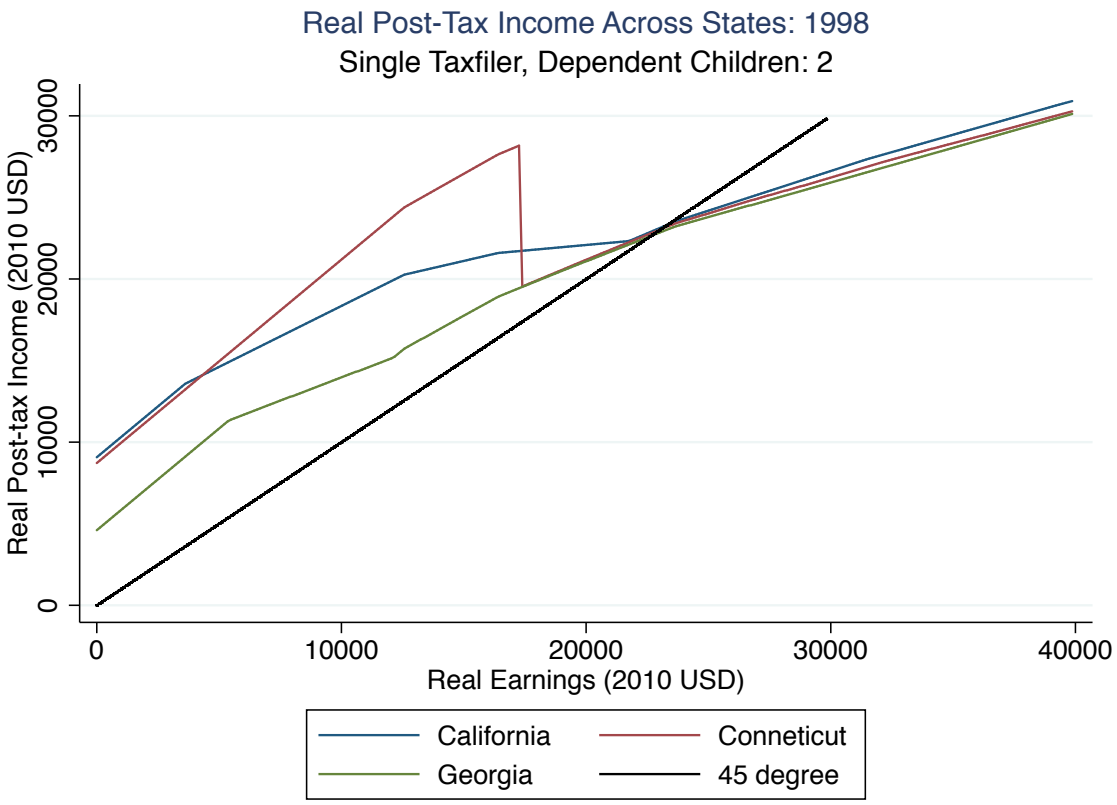

Figure 4: Distribution of Work Incentives

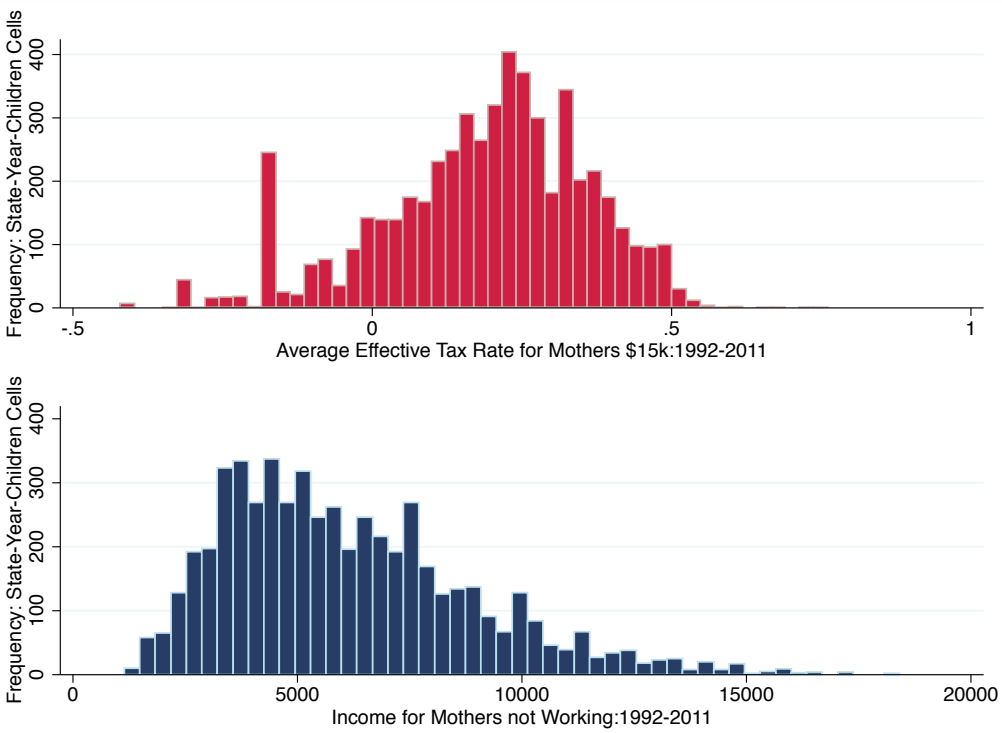

Figure 5: Work Incentives and Age

Figure 6: Work Incentives and Years of Education

Figure 7: Work Incentives and High School Graduation Rates

Figure 8: Work Incentives and Percent Non-white

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