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Research Proposal

Welfare benefits and Welfare Spells

1. *Overview*

This paper seeks to explain the relationship between benefits and dependency on social programs. In order to identify the causal link between the two, the paper uses a large data set that contains information of cases in the Aid to Family with Dependent Children (AFDC) gathered from four counties in California from 1992 to 1996. The identification comes from an exogenous legislation change at the end of 1992 that allows for the existence of a treatment and control group.

This paper contributes to the literature on AFDC dependency by applying survival analysis on AFDC duration to both capture the time effect and policy effect. The paper employs a difference in difference analysis that allow for identification of the effect of the guaranteed benefit, reduction rate, and program eligibility.

2. *Research Question and Related Literature*

The paper seeks to answer the question: *Does the magnitude of benefits affects the length of stay on AFDC?* This question is important because benefit is the main component of most social programs that target the disadvantaged. A good understanding of the relationship between the level of assistance and dependency is therefore useful for the design and evaluation of social programs of this kind.

a. *Introduction to AFDC*

AFDC provided cash transfers to children or households with children who lacked parental support. There were many AFDC categories, but most recipients were classified as AFDC-U or AFDC-FG. Recipients of AFDC-FG were eligible families where either parent was absence or unable to provide financial support for the child; recipients of AFDC-U were eligible families where the principal earner was unemployed. To be eligible for AFDC assistance, the supported child must be under 18 years old and the household must have

incomes lower than the state-specific level. While the program did not impose restrictions on gender of the family heads, the majority of eligible households were families with single mother and child. Not all eligible households chose to participate. The conjecture is that there is a negative stigma associated with welfare recipient that discourages utility maximizing individuals to participate (Moffitt, 1989 & 1992).

The cash benefit from AFDC comprises a fixed allowance and a reduction dependent on income. The potential benefit is computed as follows,

$$B = G - t * Y$$

Where G is the baseline of assistance for a specific family type, t is the benefit reduction rate, and Y is the net income used as a basis for deduction. The baseline assistance G is the *smaller* between the Maximum Aid Payment (MAP) and the Minimum Basic Standard of Adequate Care (MBSAC). Due to variation in t and G across states, the value of B differs significantly inter-state. For instance, in January 1989, the guarantee of a family of four was $788 per month in California and $144 per month in Mississippi; the gap is considered substantial even with adjustments for the difference in cost of living (Moffitt, 1992)

b. The relationship between AFDC benefits and participation in the program

The surveyed literature analyzes welfare participation using both static and dynamic models. Most static models use the binary response (on/off AFDC) as the dependent variable. The explanatory variables are G, t, wage rate, and the high order terms of these variables (Hosek, 1980; Blank, 1989; Robins, 1987; Robins 1986, Moffitt 1986; Moffitt, 1983). The evidences on the effects are consistent: G is positively related with the probability of an eligible household to be on AFDC while t is negatively related.

Other studies use dynamic models to analyze the entry and exit of AFDC. The increment in G are show to induce entry and reduce exit; the conclusion on t is the opposite (Blank, 1989; O'Neil et al. 1984; Plotnick, 1983). Regarding AFDC case load, Hoynes (1996) shows that for AFDC-U recipients, participation is responsive to changes in benefit structure; in a way that higher benefits would induce higher case load. A related study in Canada by Fortin et al. (2002) provides relevant evidence for the conjecture. Using a welfare reform in Quebec

in 1989, Fortin et al. (2002) shows that a significant increment in benefit structure leads to a modest lengthening of welfare duration. There are also contradicting results, as in Hoynes and MaCurdy (1994) where no evidence of real AFDC benefits and exit likelihood is found.

Regarding heterogeneous effect, the existing literature approaches the issue of welfare duration from both labor-supply and labor-demand perspectives. On the supply side, the important factors of dependency are education attainment, family structure, and job training (Blank, 1989; Hoynes, 1996). Improvements in these factors are shown to lessen reliance on welfare program. The demand effects are shown to be more diverse in size depending on measurement choice. For instance, using average wages as an indicator for labor market condition, Hoynes and MaCurdy (1994) shows that variations in market condition do not explain AFDC dependence. Meanwhile, Fitzgerald (1995) uses a group of county specific variables[1] to measures labor market condition and finds that local area characteristics affect leaving rates for blacks and re-entry rate for whites.

3. Research Data and Experimental Design

a. Legislation change

This paper uses data from the California Work Pays Demonstration Project in 1992. The project was initiated by the State of California to assess the effects of the changes in AFDC provision in 1992[2]. The new legislation came into effect in 1992 with three changes:

(E1) Reduce MAP on all AFDC types by 5.8 percent.

(E2) Extend the pre-existing $30 reduction, and the 1/3 income reduction.

(E3) Eliminate the existing 100-hour work limit for AFDC-U.

The change in **(E1)** is intuitive: it would reduce G by 5.8 percent if G happened to be computed using MAP. The change in **(E2)** is effectively a reduction in t by 30 percent. To demonstrate this, consider a family that earns pre-AFDC income Y. The potential benefit that this family can receive before the change and after the change is:

[1] Proportion of Black in the county, unemployment, sex ratio, county per capita income.
[2] The legislation changes were in effect in July and October 1992. The data was collected from December 1992.

Month	Before	After
0-4	$G - \frac{1}{3}(Y - 30)$	$G - \frac{1}{3}(Y - 30)$
5-12	$G - (Y - 30)$	
12+	$G - Y$	

The potential benefit is similar or greater with the policy change. Before the legislation, each dollar earned from work would reduce the received benefit by one dollar for recipients of who stay pass 12 periods on AFDC; after the legislation, the reduction was less than 2/3 dollar in benefit for each dollar earned from work.

(E3) would allow AFDC-U beneficiaries to work more than 100 hours a month and still maintain their eligibility provided that their income was below the eligibility level. This elimination however was not applicable for new AFDC applications as the 100-hour limit served as a basis to establish financial deprivation.

The policy change described above did not applied to all cases immediately. For two years after the legislation came to effect, a proportion of randomly selected households was not subjected to the change. The treatment group is defined as those who were subjected to the change.

b. Randomized Control and Data

The data set contains 862,828 cases and 104,663 persons sampled from the pool of participants from four counties[3] in California. The unit of observation is case, and the sampling period is from December 1992 through December 1998. The data consist of information on the history of participation, eligibility, incomes, housing/utility cost, characteristics of the family and demographic factors. The data set is appropriate to study my proposed question because it contains a large amount of observations for all AFDC sub-groups and race/ethnicity groups. The spells of insurance were extracted from administrative data and therefore the issues of misreporting is fully resolved. Further, since

[3] Alameda, Los Angeles, San Bernardino, and San Joaquin.

the data were sampled from participants in California only, I can side-step the issues with state-by-state variation in baseline benefits. The data set, however, lacks information on labor-supply factors such as education attainment and job training. These factors are shown in most study to be important determinants of entry and exit AFDC.

4. Theoretical framework

In this section, I assess the theoretical effects of (E1)-(E3) as if they are imposed separately. I use the work-leisure graph and budget constraints to conjecture the household's behaviors.

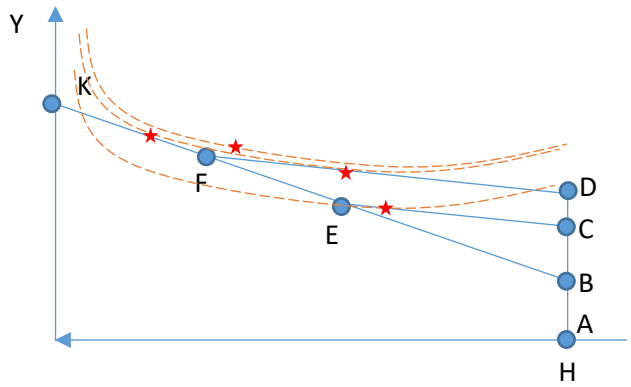
a. Reduced Guaranteed Assistance

Consider the classical static labor supply model in the AFDC context with H as work hours in the period, N as unearned income, w as wage rate, G as AFDC guaranteed assistance for the family family type, and t is the federal benefit reduction rate. The benefit received from AFDC is:

$$B = G - t(WH + N)$$

Which means that the benefits that an eligible family can received from participating in AFDC is the preset guaranteed assistance G for the family type reduced by the reduction rate t and the family's income from work and other sources. The budget constraint for participating family is demonstrated below:

Figure 1



The gap between point A and B is the unearned income. The segment BD represents the guaranteed assistance from the program. For eligible families that do not participate in the program, their budget is the segment ABEFK, with the slope of the budget line being their

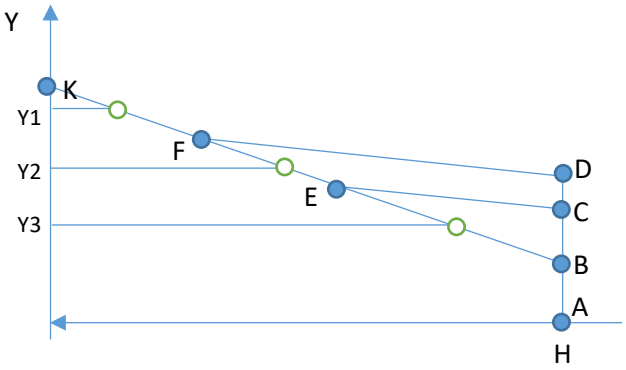
wage rate. For families that participate, the budget constraint is ADFK with F being the break-even point where the benefit of participating fully lapses; the slope between F and K is the wage rate – W; the slope of DF is wage rate reduced by benefit reduction rate $-W(1-t)$.

The size of the guaranteed assistance matters for the entry/exit the program. We have the situation that prior to the change, a family is indifferent between working less to stay on welfare (star on FD) and working more (star on FK). If the amount of assistance drops from BD to BC, the family will not participate because any new combination on CE is inferior to the first combination on FK. In other words, the benefit from staying on welfare is too low for some family that they decide to leave.

b. Removal of work limit, together with reduced guaranteed benefits

In this section, we discuss the household's behavior when the benefit is reduced from BD to BC simultaneously with the removal of the restriction on 100-hour limit. Consider the leisure-work budget constraint as in Figure 2. Let Y_1, Y_2, Y_3 represent the pre-AFDC income that a family may have if it works up to the 100-hour limit. $Y_1 > Y_2 > Y_3$ as we move down the wage rate.

Figure 2



At Y_1, the policy spell comes only from G because the family would be ineligible if it works more than 100 hour regardless of the regulation on hours.

At Y_2, the policy spell comes only from G. Before the change, the family can work more than 100 hours and still be eligible as long as its income is still below the threshold F. After the change, G is binding.

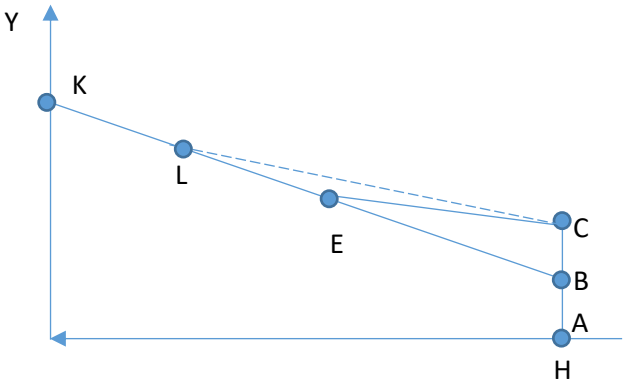
At Y_3, the policy spell comes *only* from H effect. Before the change, a family must work less than 100 hours to remain eligible for the benefits. After the change, however, it can work more than 100 hours and still receives AFDC benefits as long as its income is below the new threshold E.

c. Extension of the 30 and 1/3 deduction

The extension of $30 deduction and 1/3 income deduction is equal to a smaller benefit reduction rate. In Figure 3, the break-even point moves from E to L, resulting in more eligibility for families whose income is on EL.

The change in work hours, however, is believed to be ambiguous. Moffitt (1992) and Levy (1979) argue that this "negative" tax does not necessarily increase average labor supply besides re-distributional effect: workers who have lower labor supply may be encourage to work more, while the worker who have higher labor supply may be inclined to work less.

Figure 3:



5. Econometrics Framework

a. Difference in Difference

I am currently working on an extended version of the DID for this project in addition to the standard DID framework (with time indicator, treatment indicator, and their interaction). The extended framework is founded upon the suggestion in Fortin et. al (2004). The section I am presenting below is preliminary and needs a lot of improvements. I also have not connected well my identification strategy with the theoretical frameworks laid above.

The conditional hazard of exiting AFDC at time *t* for the treatment and control group are

$$\lambda_i^T(t) = \lambda_0^T(t) + (\alpha + \gamma)P + z_i(t)\omega + \epsilon_i^T$$

$$\lambda_i^C(t) = \lambda_0^C(t) + (\beta + \eta)P + z_i(t)\sigma + \epsilon_i^C$$

Where $\lambda_i(t)$ is the hazard for individual i to quit at an instance t; P is an indicator of pre- and post-legislation, γ and η controls for time-specific effects that may shift the hazard, $z_i(t)$ is a vector of other characteristics[4]:

I now impose the 2 assumptions:

$\gamma = \eta$: the time specific effects are identical between treatment and control group.

$\beta = 0$: no effect on the control group after the policy change.

With these assumptions, I can rewrite the first two equations as:

$$\lambda_i^T(t) = \lambda_i^C(t) + [\lambda_0^T(t) - \lambda_0^C(t)] + \alpha P + z_i(t)(\omega - \sigma) + \epsilon_i^T - \epsilon_i^C$$

Let T_i be the indicator of treatment, then:

$$\lambda_i(t) = T_i\lambda_i^T(t) + (1 - T_i)\lambda_i^C(t)$$

$$= T_i\left(\lambda_i^C(t) + [\lambda_0^T(t) - \lambda_0^C(t)] + \alpha P + z_i(t)(\omega - \sigma) + \epsilon_i^T - \epsilon_i^C\right) + \lambda_i^C(t) - T_i\lambda_i^C(t)$$

$$= T_i\,[\lambda_0^T(t) - \lambda_0^C(t)] + \alpha T_i P + T_i z_i(t)(\omega - \sigma) + T_i\left(\epsilon_i^T - \epsilon_i^C\right) + \lambda_i^C(t)$$

$$= T_i\,[\lambda_0^T(t) - \lambda_0^C(t) + \epsilon_i^T - \epsilon_i^C] + \alpha T_i P + T_i z_i(t)(\omega - \sigma) + \lambda_i^C(t)$$

$$= T_i\,[\lambda_0^T(t) - \lambda_0^C(t) + \epsilon_i^T - \epsilon_i^C] + \alpha T_i P + T_i z_i(t)(\omega - \sigma) + \lambda_0^C(t) + (\beta + \eta)P + z_i(t)\sigma + \epsilon_i^C$$

Under this framework, the right hand side variables are the treatment indicator, the pre/post-legislation indicator, the variables for heterogeneous effect, and the interaction between these variable and the treatment indicator. The variable of interest is α. It

[4] Including:
- Labor market conditions measured by unemployment rate/employment rate/ average earnings. These variables represent labor market demands.
- Neighborhood/local characteristics include the racial component in the area of residence, urban/rural classification, poverty rate, and if possible, literacy rate. These variables are in place also to alleviate the issue of omitted variable bias coming from not being able to observe education of participant and the availability of job training.
- Demographic, participant specific variables include: age, gender, race, number of kids alien status, food stamp eligibility, and the year the participant enter the program.

represents the effect of the legislation change on welfare duration. By varying the sub-sample as suggesting in the previous section, we can separately identify the component of α that belongs to (E1), (E2), and (E3). We can also identify the time specific effect γ and the heterogeneous effects on the treatment and control group σ, ω.

b. Separating effects

Using the information from section, I construct 4 specification of the difference in difference estimation by restricting the sub-sample as follows:

Model	Sample		α
	MAP vs MBSAC	AFDC type	
1	All	All	E1 + E2 + E3
2	MAP > MBSAC	FG	E2
3	MAP > MBSAC	U	E2 + E3
4	MAP < MBSAC	FG	E2+ E1

The last column shows the component of α that comes from three parts [5] of the change. Model 4 can be improved by splitting the sub-samples further by work hours. But such information is not available in the data set.

In all specification, the duration is counted from the first appearance in the data set until the last appearance when the supported child was still younger than 18 years old. If the family exit AFDC when none of the children in the family was 18 years old and younger, the duration will be treated as right censored/incomplete spell.

[5] The plus sign in the last column represents the combination of effects, not the linear summation.

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