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The Effects of State-Specific Supplemental Nutrition Assistance Program Policies on Individual Migration

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ABSTRACT

The disbursement of welfare benefits at the state level and the perceived race to the bottom due to welfare based migration are a growing policy concern. At the federal level, any household whose income falls at or below 130% of the poverty line after allowable deductions qualifies for SNAP, formerly known as food stamps. However, the program is administered by states, and states can make it easier for households to obtain benefits by lowering the qualification level. This paper analyzes how variation in minimum requirements and benefit levels in different states affects migration between states and uses a probit model to predict the probability that an individual migrates to a new state. In the current economic situation, policies that affect monetary outflow are important to consider. If individuals are moving between states to obtain higher food assistance benefits, then states have an incentive to work against this process by increasing eligibility requirements or implementing penalties for migration. We find that individuals are more likely to migrate to states with easier requirements and lower poverty levels.

I. INTRODUCTION

The Supplemental Nutrition Assistance Program (SNAP) is a federally subsidized program that provides low-income families and individuals with money to buy food. SNAP is a federally run program that provides money to the states, which they then distribute. The 2008 Farm Bill Title IV: Nutrition appropriates the money for the SNAP program as well as other welfare programs. The total cost of SNAP was 68.3 million for the 2010 fiscal year with an average monthly benefit of $290 per household (Eslami et al. 2011).

The Federal Government determines uniform base eligibility requirements, but because this is a state run distribution program there are variations in eligibility and benefits at the state level. At the federal base level, the income level of those eligible for SNAP falls at or below 130% of the federal poverty level (FPL). Many states have increased the percentage of the FPL at which families are eligible to receive benefits, making it easier for families to qualify for benefits. Additionally, states can provide more benefits than the minimum required at the federal level. Individuals may migrate to states with requirements that are less stringent than the federal requirements and/or to states with higher benefits. For example, an individual in Georgia qualifies at 130% FPL while an individual in Florida qualifies at 200% FPL. Information on benefit levels and qualifying FPL can be found on Table 1.

This research determines whether individuals migrate in response to variations in SNAP eligibility requirements and differences in benefit levels. We find evidence that states with easier qualifying levels are more likely to have immigration. In addition, states with higher benefits are less likely to have immigration as their qualifying levels are typically higher. Given the large expenditures involved with SNAP, this analysis provides important policy implications, such as arguments for standardized eligibility requirements and basic cost of living increases rather than varying levels of eligibility requirements.

II. LITERATURE REVIEW

The literature addresses many possible solutions to the continuing issues of migration due to spatial variations in welfare programs, one of which is consistent benefits across countries or states. Warin and Svaton (2008) utilize a gravity model to determine the flow of migration in the EU-15 countries over the years 1995 to 2004. They find a presence of welfare immigration to EU-15 countries with higher level of social protections expenditures. Furthermore, they support the idea of a more unified welfare policy due to movement from countries with lower welfare benefits to countries with higher benefits. Saavedra (1999) tests whether or not states strategically set benefits for the Aid to Families with Dependent Children (AFDC). She uses Bucovestsky's model of tax competition to generate an equilibrium model of welfare migration. She concludes that states are competing when setting benefits; when one state decreases benefits other states follow. Walker (1994) analyzes U.S. county-to-county migration using data on food stamps (FS) and AFDC, he combines payments to create a welfare amount collected per family. He utilizes an ordinary least squares (OLS) approach to determine migration ratios while controlling for county dependent data. The estimated effects of the welfare

benefits on migration are not statistically significant, therefore not supporting a hypothesis of higher benefits creating a welfare magnet. He recognizes that there are confounding factors present within the model, such as family makeup and the combination of welfare benefits. Levine and Zimmerman (1999) utilize the categorical nature of AFDC eligibility \to analyze the theory of the welfare magnet. Individuals qualify for benefits based on their income level, which allows them to be categorized by their potential to receive or not receive benefits. They utilize a probit estimation to model the probability of an individual moving from one state to another, using Microdata from the National Longitudinal Survey of Youth (NLSY) from 1979 to 1992.They find that the potential for an increase in benefit levels is driving the migration pattern. They find that a national increase of 4% in welfare cases can be expected when the system does not have uniform benefits across states.

Distance between locations is a mitigating factor in migration moves. McKinnish (2007) combines different approaches to AFDC welfare migration analysis to determine the importance of short distance moves in welfare migration utilizing data from 1980-1990. He uses an interior comparison approach, which utilizes border and interior counties, to determine where migration is largest and for whom. He finds that while the estimates are consistent with the presence of welfare migration the estimates are not statistically significant.. He recognizes that the number of people who would have a change in welfare status due to migration is small.

Several papers analyze the effect of differing welfare benefits or income on the possibility of migration. Kennan and Walker (2005) develop a model of an individual's optimal migration based on search characteristics. Migration decisions are ultimately meant to maximize lifetime payouts but individual state specific payout shocks influence decisions. Empirically they find that individuals who receive low wages, but not

necessarily welfare, in their home state are more likely to move. Enchautegui (1997) investigates the impact of welfare payments and wages on female interstate migration in the US. She uses public use micro samples (PUMS) from the 1980 census, and predicts migration based on place of residence in 1975 and 1980. PUMS data are readily available untabulated records on individuals and units that are compiled from the American Community Survey. She finds that welfare payment differentials help determine migration patterns. The most significant effects are for single mothers with children and women who receive public assistance. Gelbach (2004) uses the 1980 and 1990 census to determine if welfare migration has an effect on states setting benefit levels and if so, what the optimal level of benefits is. He uses a probit and CLAD model to simulate possible life cycle patterns over the course of 12 years. He finds evidence of welfare migration, especially for individuals who are single and with lower education levels.

Differences in qualifying levels have the ability to drive migration as much as the actual payout. Schram (1998) analyzes the terminology "race to the bottom". The "race to the bottom" hypothesizes that states lower their benefit levels or make it harder to obtain benefits to discourage migration to that state. He finds that states are competing with one another to offer fewer benefits or make it harder to qualify in order to have less expenditures on welfare programs. Rom et al. (1998) analyzes the impact on the AFDC program during its change from the children/temporary assistance for needy families (TANF) program, specifically addressing the level of competition in benefits setting. The states have the ability to set the AFDC guarantee, and it can therefore vary by state, enabling them to look at the effect of welfare differentials on migration patterns. They find evidence that states are sensitive to other states' welfare policies, supporting a race to the bottom.

Previous literature has addressed migration as a result of various welfare programs such as, AFDC, unemployment, and SNAP. The literature does not address SNAP as a standalone program and its potential to generate interstate migration, specifically on neighboring states, as individuals move to receive higher benefits. This research analyzes the impact of SNAP on interstate migration using various measures of distance to determine what drives migration for individuals on SNAP.

III. METHODOLOGY

Theoretical Model

The question of inter-state migration due to welfare benefits can be modeled as a utility maximization problem, where utility is a function of the benefits of moving minus the costs of moving. Individual *i* will choose to move from state *j* to state *k* if the net benefits of moving are positive. The utility of an individual *i* in state *j* can be defined as:

$$U_{ij} = U(x_{ij}, y_{ij}) \qquad (1)$$

where x_{ij} is the quantity of food purchased, and y_{ij} is the quantity of a composite good representing all other goods consumed by the individual. Utility is maximized subject to the budget constraint:

$$P_{xj}x_{ij} + P_{yj}y_{ij} = I_{ij} + SNAP_{ij} \qquad (2)$$

where I_{ij} is the household's income in state *j*, $SNAP_{ij}$ is the amount of SNAP benefits that individual *i* receives in state *j*, and P_x and P_y are price indexes for food and all other goods, respectively. In order to determine whether or not to migrate, the individual must also determine their utility in state *k*, which will be:

$$U_{ik} = U(x_{ik}, y_{ik}) \qquad (3)$$

The budget constraint in state *k* will differ to account for moving costs, and can be written as:

$$P_{xk}x_{ik} + P_{yk}y_{ik} = I_{ik} + SNAP_{ik} - C_{ijk} \qquad (4)$$

where C_{ijk} is equal to the cost of moving from state *j* to state *k,* distributed across the individual's expected time in state *k* to create an annual amount. $SNAP_{ik}$ will change if the qualifying level is different in state *k* than *j* or if the individual's ability to qualify differs between states *j* and *k*.

From the individual's optimization problems for states *j* and *k,* we can derive the indirect utility functions for each state, $V_{is}(P_x, P_y)\ s = j, k$. If there are shocks to utility that are not captured by the utility maximization model, we can write actual utility as:

$$\overline{U}_{ij} = V_{ij}(P_{xj}, P_{yj}, I_{ij}, SNAP_{ij}) + \varepsilon_{ij} \qquad (7)$$

and

$$\overline{U}_{ik} = V_{ik}(P_{xk}, P_{yk}, I_{ik}, SNAP_{ic}, C_{ijk}) + \varepsilon_{ik} \qquad (8)$$

where $\varepsilon_{is}, s = j, k$, are exogenous utility shifters.

The net gain from moving from state *j* to state *k* is defined as:

$$U^*_{ijkt} = [V_{ik}(P_{xk}, P_{yk}, I_{ik}) + \varepsilon_{ik}] - [V_{ij}(P_{xj}, P_{yj}, I_{ij}) + \varepsilon_{ij}] \qquad (9)$$

If $U_{ijkt} > 0$ then that individual will migrate from state *j* to state *k.*

Econometric Model

Consistent with previous random utility models, the model will be estimated using a probit model. We observe whether or not an individual moves. The individual will move when equation (9) is greater than zero. Let Y_{ijkt} be an indicator variable, indicating whether or not individual *i* moves from state *j* to state *k* at time period *t*. We will observe:

$$Y_{ijkt} = \begin{matrix} 1\ if\ U^*_{ijkt} > 0 \\ 0\ if\ U^*_{ijkt} \leq 0 \end{matrix}$$

Let U^*_{ijkt} be written as:

$$U^*_{ijkt} = \beta_1 B_{ijkt} + \beta_2 I_{it} + \beta_3 P_{jkt} + \beta_4 D_{jkt} + \beta_5' R_i + \beta_6' T + \beta_7 FEM_i + \beta_8' MAR_i +$$

$$\beta_9 QUAL_{jkt} + \beta_{10} HOUSE_{jkt} + \beta_{11}' EMP_{it} + \beta_{12} NEI_{jk} + \mu_{ijkt} \qquad (10)$$

where B_{ijkt} is the difference in SNAP benefits (the real AFDC monthly guarantee per person) for individual i between state j and k at time t. I_{it} is the reported income of the individual i at time t. P_{jkt} is the difference in poverty rate at time t in state j and k. D_{jkt} is the difference in democratic strength between states j and k at time t. Democratic control is defined by the Gallup poll as the percentage of individuals who identify as democrats in each state. R_i is a vector of ethnicity dummy variables, representing the individual's ethnicity, including: black, Chinese, Japanese, Other Asian and American Indian. T is a vector of time period dummy variables ranging from 2007 to 2009. FEM_i is a dummy variable for Female. MAR_i is a vector of dummy variables indicating marital status, including: separated/divorced, widowed and never married. $QUAL_{jkt}$ is the difference in the percent of the poverty line at which the individual i qualifies for SNAP (A positive difference indicates easier requirements in state k compared to state j). $HOUSE_{jkt}$ is the difference in the housing price index between state j and k at time t. EMP_{it} is a vector of dummy variables indicating the employment status of individual i at time t, including: unemployed, full time employed and part time employed. NEI_{jk} is a dummy variable equal to 1 if state k is an adjacent neighbor to state j.

If X is a vector containing contains all explanatory variables, β is a vector of the coefficients in equation (10), and if μ_{ijkt} is normally distributed, then the probability of an individual moving from state j to state k will be:

$$\Pr\left(Y_{ijkt} = 1 | X\right) = \phi(X'\beta) \qquad (11)$$

where ϕ is the cumulative distribution function of the normal distribution.

IV. RESULTS

Table 2 reports the variable names and sources for the probit equation. Tables 3 and 4 reports the summary statistics for all variables included in the model. Due to the large number of observations in the data set (47.7 million), the probit was run with a .5% sample. Summary statistics are reported from that sample. In this sample, approximately 8% of individuals receive food stamp benefits. Those that receive food stamp benefits are on average receiving $128.22 a year with the maximum reported being $11,900.00. The average age in the sample is 46 years old. Over 50% of the sample is married, employed and white. Approximately, 37% of the sample completed high school.

Table 5 reports the marginal effects of the probability of migration from state *j* to state *k*. All of the reported results are highly significant at the 5% level. States with higher unemployment rates are less likely to have migration due to SNAP benefits. In addition, individuals are more likely to migrate to states that have easier qualifying levels, such as 200% instead of 130%. States with lower housing costs are more likely to have more migration as a result of SNAP. In terms of benefits, states with higher benefits are less likely to have migration. Referencing table 1 and 2, it can be seen that states with higher benefits tend to be harder to qualify for, such as New York or California. Empirically, these states tend that have a higher cost of living as well. States with high poverty rates and a large amount of democrats are also less likely to have. Furthermore, states that are considered to be neighbors and are given a value of 1 are more likely to have migration than states that are not neighbors to the original state.

V. CONCLUSIONS

Our results show that individuals may migrate in order to receive SNAP benefits. This provides an argument for standardized qualifying levels across states. In addition to

weaker SNAP requirements, low employment rates, low poverty rates, and low housing prices are associated with a higher probability of immigration. Further analysis will look at individual counties on state borders and analyze the probability of migration for individuals who reside in those counties.

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VII. TABLES

Table 1: State qualifying levels for 2006 to 2010 and benefit levels in 2010

State	Qualifying Level	Benefits in 2010	State	Qualifying Level	Benefits in 2010
Alabama	130%	$ 126.90	Nebraska	200%	$ 121.60
Arizona	200%	$ 129.95	Nevada	200%	$ 124.23
Arkansas	130%	$ 122.59	New Hampshire	185%	$ 121.21
California	130%	$ 146.52	New Jersey	185%	$ 138.03
Colorado	130%	$ 141.62	New Mexico	165%	$ 126.54
Connecticut	185%	$ 141.26	New York	130%	$ 150.63
Delaware	200%	$ 126.77	North Carolina	200%	$ 128.24
Florida	200%	$ 141.40	North Dakota	200%	$ 132.21
Georgia	130%	$ 134.35	Ohio	130%	$ 141.72
Idaho	130%	$ 128.65	Oklahoma	130%	$ 128.71
Illinois	130%	$ 141.00	Oregon	185%	$ 126.19
Indiana	130%	$ 132.29	Pennsylvania	160%	$ 123.43
Iowa	160%	$ 128.84	Rhode Island	185%	$ 142.49
Kansas	185%	$ 124.40	South Carolina	130%	$ 131.34
Kentucky	130%	$ 127.05	South Dakota	130%	$ 133.80
Louisiana	130%	$ 129.75	Tennessee	130%	$ 133.86
Maine	185%	$ 129.17	Texas	164%	$ 127.82
Maryland	200%	$ 130.45	Utah	100%	$ 123.58
Massachusetts	200%	$ 129.70	Vermont	185%	$ 121.11
Michigan	200%	$ 131.77	Virginia	130%	$ 128.63
Minnesota	165%	$ 121.00	Washington	200%	$ 120.87
Mississippi	130%	$ 122.54	West Virginia	130%	$ 118.94
Missouri	128%	$ 125.86	Wisconsin	200%	$ 116.57
Montana	200%	$ 129.54	Wyoming	135%	$ 123.75

Table 2: Summary of Variables

Variable	Source	Explanation
B_{jkt}	Congressional Research Service	is the difference in SNAP benefits
I_{it}	American Community Survey	is the reported income of the individual i at time t
P_{jkt}	-	is the difference in poverty rate at time t in state j and k.
D_{jkt}	Gallup	is the difference in democratic strength
R_i	American Community Survey	is a vector of ethnicity dummy variables.
T	-	is a vector of time period dummy variables.
FEM_i	American Community Survey	is a dummy variable for Female
MAR_i	American Community Survey	is a vector of dummy variables indicating marital status
$QUAL_{jkt}$	Congressional Research Service	is the difference in the percent of the poverty line
$HOUSE_{jkt}$	Consumer Price Index	is the difference in the housing price index
EMP_{it}	American Community Survey	is a vector of dummy variables indicating the employment status of the individual
NEI_{jk}	-	is a dummy variable equal to 1 if state k is an adjacent neighbor to state j

Table 3: Summary Statistics

Variable	Mean	Std. Dev.
Foodstamps	0.081284	0.273272
Amount of Food Stamps	128.2231	663.9735
Age	46.59502	19.15895
Gender	1.528419	0.499193
Total Income	83084.1	90453.02
Income from Welfare	59.28566	765.9778

Table 4: Summary of Marital Status, Gender, Employment, and Education Status

Marital Status	
Married	55.95%
Seperated	1.73%
Divorced	8.64%
Widowed	6.57%
Single	27.12%
Employment Status	
N/A	1.75%
Employed	59.62%
Unemployed	3.69%
Not in Labor Force	34.94%
Race	
White	78.43%
Black	10.89%
American Indian	0.89%
Chinese	1.29%
Japenese	0.16%
Other Asian	2.78%
Other Race	4.06%
Two Major Races	1.32%
Three or more Major Races	0.20%
Educational Attainment	
N/A	0.73%
to Grade 4	0.47%
To Grade 8	4.15%
Grade 9	2.84%
Grade 10	3.70%
Grade 11	4.08%
High School Graduate	37.49%
1 year of College	13.87%
2 years of college	6.98%
College Graduate	15.19%
More than 5 years of College	10.50%

Table 5: Marginal Effects on the Probability of Migration from State *j* to State *k*

	dy/dx
Difference in Poverty Rate	-7.2064***
	(0.0267)
Difference in Benefits	-0.0673***
	(0.0001)
Difference in Qualifying Levels	0.4651***
	(0.0034)
Difference in Democrats	-0.0584***
	(0.0002)
Difference in Housing Index	-0.0018***
	(0.0000)
Difference in Unemployment	-0.0160***
	(0.0006)
Income (10000s)	-0.0000***
	(0.0000)
Income squared	0.0000***
	(0.0000)
Neighbor	0.9098***
	(0.0018)
Controls for:	
Race	Yes
Gender	Yes
Employment Status	Yes
Education	Yes
Marital Status	Yes
Year	Yes
N	22676175
ll	-6247074.1

Standard errors in parentheses *p<.10, **p<.05, ***p<.01