

Dissertation Proposal

Policy Variation and Program Participation Outcomes

Three Essays on the Supplemental Nutrition Assistance Program (SNAP)

General Introduction

I. Introduction

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program (FSP), is the largest federally funded nutrition assistance program in the US, aiming to ensure an adequate level of consumption of nutritious food by low - income households (Hoynes & Schanzenbach, 2016). SNAP¹ assists low-income households in purchasing sufficient food and nutrition when facing financial hardships (Tiehen, Newman, & Kirilin, 2017). It provides monthly cash benefit to participating households or individuals delivered through an Electronic Benefits Transfer system (EBT). The monthly cash benefit is transferred to an electronic card that can only be used at participating retailers to purchase food products.² SNAP benefits can be used to purchase almost all food items at grocery stores except alcoholic beverages, tobacco products and hot food prepared in stores.

As of August 2017, over 41 million Americans received more than \$51 billions in SNAP benefits³. The monthly average is \$125 per person and \$250 per household. The number of participants and, consequently, the program's costs have increased significantly since its inception. In 1965, only half a million individuals received FSP benefits at a total cost of \$75 million (including benefit and administrative costs). By 2016, the government spent almost \$80 billion on SNAP benefits, which were given to 44.2 million Americans. However, the increase has been neither steady nor constant over

¹ Throughout the papers and depending the context the term SNAP will be used to refer to the current program as well as the Food Stamp Program (FSP).

² A list of eligible and non-eligible items can be found on the USDA's Food and Nutrition Service's website: <https://www.fns.usda.gov/snap/eligible-food-items>

³ SNAP data presented here is obtained from the Food and Nutrition Service of the United States Department of Agriculture's website, and will updated as the process goes.

time. Two remarkable periods when SNAP costs and participation soared were the early years of the program until 1976, and the twelve years following the universal application of EBT in 2002, which includes the five years following the Great Recession of 2008 and the subsequent stimulus package. Between these two periods, SNAP experienced moderate increases and decreases in participation and costs, depending on economic conditions and policy changes that will be discussed in detail in the following sections.

Given the importance of the program and its magnitude in terms of costs and number of beneficiaries, SNAP has received a lot of attention in literature. As will be discussed throughout the coming papers, several dimensions of SNAP have been examined that can be generally grouped under two main themes. The first one focuses on participation in SNAP and caseload by examining macroeconomic changes such as unemployment, poverty, recession, etc. and changes in SNAP policies. The other theme in literature investigates the impact of SNAP on its recipients' well being and behavior such as poverty, food security, nutrition, eating choices, work incentives, etc.

I am proposing to write three essays that belong to the first theme presented in the previous paragraph. The key element among those essays is that the state is the center of action in determining SNAP outcomes especially following the 1996 Personal Responsibility and Work Opportunity Reconciliation Act that empowered the states in designing their own SNAP policy. In addition, the three papers primarily examine SNAP policies that affect eligibility, transaction and information costs, and welfare stigma with the intent of understanding how the variation of those policies among states affect different outcomes.

In **the first paper**, I will examine the causes of variation in participation rates among states through a panel regression model that mainly focuses on SNAP policies and party control of government. Participation rate is the percentage of SNAP participants to the overall SNAP eligible population. It is a measure of the program's well targeting and effectiveness in reaching all those who are in need of public assistance. As will be elaborated in this paper, participation rates vary considerably among states and SNAP literature has usually focused on enrollment and caseload rather than participation rate.

The proposed estimation model includes a number of SNAP policies affecting enrollment, information and transaction costs, as well as welfare stigma that differ from one state to another. Those policies include for example whether the state uses a simple reporting system, telephone instead of personal interviews, the length of the certification period, operating a call center, outreach spending, and others. In addition, the model examines the effect of political variables on the state level such as party control of the legislature, governorship and citizen ideology index on participation rate. The data will be compiled from multiple time series data and importantly it includes the participation rate of working poor households- a group with a considerably lower participation rate than the national average- allowing the examination of SNAP policies on this particular group to determine which barriers are strongly relevant. The control variables include unemployment, poverty rate, per capita income, and the percentage of African American and Hispanic populations.

In the **second paper**, the effect of the Electronic Benefit Transfer (EBT) system on enrollment will be examined using a linear probability model and a difference in difference technique to estimate the impact of EBT on the probability of households' participation in SNAP. In addition to its importance in reducing fraud and administrative costs, EBT possibly contributes to reducing welfare stigma attached with SNAP receipt. Hence, it is used in this paper as a proxy to welfare stigma and it is predicted that controlling for other factors, EBT increases the probability of participation. The model will benefit from the temporal variation in implementing statewide EBT systems that provides a quasi-experimental environment to investigate the impact of one policy intervention (EBT usage) on two groups who do not differ systematically from each other except for being subject to that policy intervention. Using longitudinal household data also enables in capturing the effect of some important demographic variables that affect participation such as ethnicity, education level, gender, language spoken at home, etc. Furthermore, SIPP includes data on food insecurity that could be investigated in both ways; as a factor impacting participation but also as a dependent variable in itself that is affected by participation in SNAP.

In the **third paper**, I am going to utilize the results of the second paper and examine a SNAP policy area that is underexplored in literature, which is the causes of variation between states in adopting a statewide EBT system. The 1996 welfare reform mandated that all states should use an EBT system in delivering SNAP benefits by 2002, however states varied in the timing of both pilot and state wide implementation, and even some states implemented the system after the due date (California, Delaware, Maine, West Virginia and Iowa). EBT contributes to reducing administrative costs and fraud associated with the unlawful sale of food vouchers, on the other hand it reduces welfare stigma, and hence the transformation towards such a system should have had a bipartisan support. This paper attempts to understand and identify the causes that led to the differences between states in adopting EBT as well as to investigate the role of policy learning in the diffusion of EBT.

The proposed essays attempt to add to the knowledge and understanding of the barriers to participation in social assistance programs by examining the effect of multiple demographic, political, economic, and policy variables on SNAP enrollment and participation rate. The first and third paper extends the discussion of the impact of politics on social policy by examining the effect of political environment on SNAP policy design, adoption and outcomes. The three essays also extend the literature on program evaluation by estimating the impact of a policy innovation (EBT) on enrollment.

The following section provides a background on SNAP, its historical development, milestones and policy changes, key features, the role of states in affecting the program, as well as its importance and impact on food security, health and nutrition.

II. SNAP Background

In January 1961 President Kennedy issued an Executive Order authorizing FSP pilot projects in eight regions. Upon the successful results of these projects further areas were added to reach forty counties and three cities extending benefits to 380,000 individuals. The FSP started on August 31, 1964, when president Lyndon Johnson signed the Food Stamp Act (FSA) that gave states the right to voluntarily implement a federally

funded Food Stamp Program. The number of states and counties adopting the program continue to grow so that by 1973 the FSA was amended to mandate that all states to have a FSP by 1975⁴.

Throughout its history and as part of the American welfare state system, SNAP was not immune from changes that affected its path. Those changes had varying effects on caseloads, either positively or negatively, depending on the nature of the changes: whether, for example, eligibility criteria were relaxed or tightened. The 1977 Food and Agriculture Act (also known as 1977 Farm Bill) impacted different groups in different ways. It eliminated the purchase requirement that required recipients to purchase food vouchers at a lower price (the food voucher is worth more than what the beneficiaries pay, and the difference is the cash benefit). This led to an increase in participation. The Farm Bill also included other measures that helped to increase participation, such as using mail, telephone, and home visits for certification, and hiring bilingual personnel and using bilingual materials. However, it also tightened eligibility criteria by excluding students and immigrants as well as penalizing potential beneficiaries who voluntarily left their jobs.

The 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) – a major welfare reform legislative bill – made major changes to the US social assistance system. The biggest change was the termination of the Assistance to Families with Dependent Children (AFDC), which was replaced with the more restrictive and less generous Temporary Assistance to Needy Families (TANF). With regards to SNAP, the Act banned the participation of legal immigrants, even those who had been in the United States before its passage . In addition, a time limit was imposed so that Able-bodied Adults Without Dependents (ABAWDs) could only participate for three months in 36 months if they did not work or engage in a work-related activity at least 20 hours each week, not surprisingly, the caseload for these two groups fell dramatically (Currie, Grogger, Burtless, & Schoeni, 2001). Importantly, the Act required all states to implement an Electronic Benefit Transfer by October 1, 2002. EBT replaced the food

⁴ A detailed history can be found at: www.fns.usda.gov/sites/default/files/timeline.pdf

voucher system where every beneficiary is provided with an ATM-like card to which the monthly benefits are transferred, The card can be used in eligible grocery stores and farmer's markets. Aside from its administrative and efficiency merits (reducing fraud and developing electronic records), the EBT system arguably reduces the stigma associated with receiving benefits since it eliminated the usage of food vouchers that were an obvious signal of being a SNAP recipient (Kabbani & Wilde, 2003).

Noticeably, the Farm Security and Rural Investment Act of 2002 – commonly referred to as the 2002 Farm Bill – restored eligibility to the formerly restricted groups as well as facilitated program access to encourage participation (Zedlewski & Rader, 2005). Children, disabled aliens and aliens who had been in the United States for five years were considered eligible to participate (Capps, Koralek, Lotspeich, Fix, Holcomb, & Anderson, 2004). At the same time, EBT cards were adopted throughout the country, reducing administration costs and fraud, as well as the stigma leading to a remarkable increase in participation (Klerman & Danielson, 2011; Zedlewski & Rader, 2005). This trend was sustained until 2012. Importantly, it included the period that followed the great recession of 2008. The recession has led to skyrocketing unemployment, rising poverty rates, all of which have contributed to more people being in need of welfare assistance, especially those with less education and labor skills. Essentially, the American Recovery and Reinvestment Act of 2009 has allowed millions of individuals to be enrolled for the first time, in addition to increasing benefit levels for those who were already recipients of benefits (Zedlewski, Waxman, & Gundersen, 2012). Average enrollment jumped from 28.2 million participants in 2008 to 33.5 in 2009, 40.3 million in 2010, 44.7 in 2011, and costs rose from 37,6 in 2008 to 53,6 in 2009, 68.2 in 2010 and 75.7 in 2011 (U.S. Department of Agriculture).

- **Features and Rules**

In order to have a better comprehension of SNAP features and rules, it is important to connect it to the overall welfare state system in the United States. It is hard to comprehend the dynamics of the program apart from the entire US social policy that is the byproduct of the values, beliefs and ideologies that drive policy making in general. SNAP exhibits the same fundamental features of the US welfare system and reflects how poverty and its causes and solutions are conceptualized in the US social policy. In his

influential book, *Three Worlds of Welfare Capitalism*, Andersen (1990) creates a typology of the welfare state regimes in industrialized democracies where the United States is classified as a liberal welfare state model with certain unique characteristics that make its system and social programs distinct from other industrialized democracies. In such a model, the welfare state is dominated by social assistance programs that are not universal but rather means- tested, the eligibility criteria to participate are restrictive and usually include work conditions, the benefits are modest, and enrollment is associated with welfare stigma. SNAP could be seen as a prime example of this model in light of the following:

- 1- SNAP is a means tested program where only those who fall beyond a financial threshold are qualified to participate in. Once, an individual's income or assets become higher than the threshold, he/she is no longer eligible to benefit from SNAP. Federally mandated eligibility criteria require that for a household to be eligible to participate, the household's gross monthly income must be less than 130% of the national poverty threshold (adjusted to the number of household members and including income from all other resources including welfare income). Net monthly income (after deductions), moreover, must not exceed the national poverty line and the assets owned by the household or the individual must be less than a federally determined threshold (currently liquefied assets must range from \$2,250 to \$3,250 and a vehicle with a fair market value less than \$4,650). Households participating in other programs such as the Temporary Assistance to Needy Families (TANF) and Supplemental Security Income (SSI) are automatically eligible to participate in SNAP. The program uses a set of deductible expenditures to calculate the net income the household has to spend on food to determine its SNAP eligibility. Deductibles include expense items such as housing, commuting, medical, work related expenses, etc.
- 2- In addition to the qualifying financial criteria, SNAP rules require that all able bodied adults between the ages of sixteen and sixty to register for work, accept job offers and participate in job training activities. Able-bodied adults without children between the ages of eighteen and fifty can only participate in SNAP? for

- a maximum of three months every three years if they remain without a job. Some states also ban drug felons from the program.
- 3- Participants in SNAP, like those who participate in other welfare programs, are usually stigmatized. Welfare recipients in general are usually constructed as unproductive, system abusers and welfare dependent.
 - 4- Enrollment in SNAP is time limited: Unemployed able bodied adults without children can participate for a maximum of 3 months every 3 years. To remain enrolled beyond this limit, the participant has to work or do work related activities for 80 hours monthly such as participating in training or capacity building activities. (U.S. Department of Agriculture). Indeed SNAP is less restrictive than TANF, which, for example, places a five- year limit on participation for all participants, regardless of work status (Farrell, Rich, Turner, Seith, & Bloom, 2008).
 - 5- Sanctions: State agencies in charge of administering the program have the legal right to punish applicants or enrollees who fail to comply with the program requirements and suspend benefits for a period of time. For example, when recipients fail to comply with work requirements for the first time, they become disqualified for one month; three months if there is a second case of non-compliance; and six months for a third noncompliance or even permanent disqualification at the state's discretion (Hahn, Pratt, Allen, Kenney, Levy, & Waxman, 2017).

- **States' power over the program**

While the federal government controls the program through funding and setting the general eligibility criteria, states enjoy power over the administration of the program that can indeed affect the program outcomes (Edwards, Heflin, Mueser, Porter, & Weber, 2016). For example, while the federal government determines the eligibility criteria, it is within the state's authority to determine the length of eligibility certification periods and to design outreach policies to inform and recruit eligible households (Dickert-Conlin, Fitzpatrick, & Tiehen, 2012). Similarly, state governments affect enrollment and participation rates using the time limit for unemployed able-bodied adults (Bolen &

Dean, 2018). States have the right to request a temporary waiver (usually for 12 months except in areas with chronic unemployment) of this condition from the USDA for areas with insufficient job opportunities or where unemployment is substantially higher than the national unemployment rate. However, waivers are limited in scope and governed by federal criteria pertaining to the conditions that must exist in order for certain areas to be eligible for the waiver of time limit (Bolen & Dean, 2018). It is important to note that applying for waivers is optional, and that states enjoy discretionary power in that regard. As such state governments can impact participation rates by simply exercising their power not to act regardless of whether eligible SNAP participants deserve waivers of the time limit rule. Evidence shows that not all states request waivers. According to the most recent published report by the Food and Nutrition Service for third quarter of fiscal year 2018 (United States Department of Agriculture, 2018), seventeen states didn't apply for waivers during this year.

States can also make administrative changes to facilitate the process of application and recertification designed to promote higher enrollment and participation rates. For example, New York State reduced barriers to participation by implementing an online application system, waiving the resource test through which financial resources are calculated in certain cases, and partnering with local NGOs to identify eligible households and provide assistance throughout the application process. (Kaye, Lee, & Chen, 2013). Edwards, Heflin, Mueser, Porter and Weber (2016) compared the dynamics of caseload in Florida and Oregon, and found that while the former initiated electronic system earlier, the later managed to reach higher participation as a result of collaborating with community organizations, facilitating the application process, extending certification periods and raising income eligibility limit.

Furthermore, while the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) prohibits the participation of drug felons in SNAP or TANF, it has permitted states to suspend this rule. States have varied in their application of this rule. Wyoming, Alaska, Georgia, West Virginia, Mississippi and South Carolina continue to apply the rule in a stringent fashion and ban those who were convicted with a drug felony from participating in SNAP. Other states such as Kansas, Maryland,

Minnesota, Missouri and Wisconsin require drug tests for former drug felons (McCarty, Falk, Aussenberg, & Carpenter, 2016).

- **SNAP Importance and Impact**

SNAP is believed to have an overall positive impact on its recipients, especially when comparing those who are eligible and do participate in the program with those who are eligible and do not participate (Tiehen, Newman, & Kirlin, 2017). Kim (2016) used difference-in-differences strategy and found that increasing SNAP benefits increased consumption of food, housing and education among participants compared to those who are eligible and do not participate. Hoynes and Schanzenbach (2009) used data from the Panel Study of Income Dynamics (PSID) and found that the introduction of FSP leads to increases in food stamp receipt, and that the FSP increases total food spending and decreases propensity to eat out. The explanation is that a cash grant shifts the consumer's budget line upward, at which a higher utility can be attained by consuming more food and non- food items (Beatty & Tuttle, 2014). Importantly, SNAP was found to be effective in addressing food insecurity. Ratcliffe, McKernan and Zhang (2011) estimated that the receipt of SNAP benefits reduces the likelihood of being food insecure by roughly 30% and reduces the likelihood of being very food insecure by 20%. Nord and Coleman-Jensen (2010) and Nord (2012) found that SNAP “leavers”-those that left the program-were more likely to become food insecure than those who remained in the program. Leavers may be required to involuntarily withdraw from the program because their incomes may have increased making them financially ineligible to continue.

SNAP is believed to contribute to reducing food insecurity and food insufficiency among low-income groups in the US. Ratcliffe, McKernan and Zhang (2011) constructed a Instrumental Variable (IV) model using nationally representative data from the Survey of Income and Program Participation (SIPP) from the late 1990s to 2005 to estimate the impact of receiving SNAP benefits on food hardships. The authors used SNAP participation rules as an IV that directly affects program participation but does not directly affect food security; that is, in the absence of the program, those rules have no relationship with food security. In particular, the instrumental variables used were the following: biometric technology (finger prints to reduce multiple participation fraud),

outreach spending, full immigrant eligibility and partial immigrant eligibility. The authors also used year dummy variables (to control for time trends) and state dummy variables (to control for time invariant unobservable). They found that SNAP receipt reduced the likelihood of being food insecure by 16.2 percentage points or by 31.2%, and the likelihood of being very food insecure by 20.2%

In addition to contributing to reducing food insecurity among its recipients, studies also found a positive impact on improving the health and nutrition of Americans. Although it does not mainly target children, SNAP has a positive impact on them. Mabli and Worthington (2014) surveyed a sample of children in 3000 households who remained in the program for six months and found that SNAP participation was associated with an approximately a one-third decrease in the odds of children being food insecure or severely food insecure. Several studies found that SNAP contributes to higher dietary quality (Basiotis, Kramer-LeBlanc, & Kennedy, 1998), increasing children's intake of essential vitamins and supplements such as iron, zinc and vitamin A (Rose, Habicht, & Devaney, 1998) Hence it reduces their nutritional deficiencies (Lee, Mackey-Bilaver, & Chin, 2006) and chances of being hospitalized (Cook, et al., 2006). Utilizing the variation in FSP introduction in US states, Almond, Hoynes, and Schanzenbach (2011) found that pregnant women who participated in SNAP during their pregnancies gave birth to higher weight babies, indicating that FSP improves birth outcomes and helps reduce neonatal mortality.

Essay I

SNAP Policies, Party Control of Government and SNAP Participation Rates

A Panel Regression Model

I. Introduction

The Supplemental Nutrition Assistance Program (SNAP) is the largest and highest funded federal program in the US food safety net. It targets low-income households and individuals who are vulnerable to food insecurity and hunger. The program started in 1965 and has expanded over time. In 2017 it reached 41 million Americans with a monthly average of \$125 per person and \$250 per household (U.S. Department of Agriculture, 2018). According to the US Department of Agriculture, in 2016, 15.6 million US households were food insecure; in other words, one in every eight Americans did not have sufficient resources to buy enough food during that year. This represents a problem resulting from the inability of SNAP to reach all those who are in need of government assistance to achieve food security. Indeed in 2016, SNAP participation rate was 85%, which means that for every 100 eligible households or individuals, 15 are not participating in the program (USDA, 2018). The participation rate has improved over time, but it varies considerably among states and also between different groups. For example, while Oregon and Washington reached almost 100 percent participation rate, Wyoming has only 56%, California 63%, and Nevada 66%. On the other hand, participation rates also vary among eligible households based on age, income, ethnicity or the presence of disability in one of a household member (Leftin, Eslami, & Strayer, 2011). For example in 2016, only 45 percent of eligible elderly adults and 40 percent of those who earn above the poverty line enrolled in the program (Cunningham, 2018). It is important here to make a clear conceptual distinction between enrollment and participation rate which are not the same thing. Enrollment or participation refers to the absolute number of those who join the program. It does not indicate how many eligible people did not participate. Participation rate on the other hand is the percentage of the

actual SNAP participants from the general eligible population. It indicates how many are left out and reflects the program success in outreach and also an indicator on the program effectiveness. Policies that contribute to increasing enrollment are not necessarily increasing participation rates. A policy might be inducive for a particular group to participate and hence increase the enrollment of this group but it does not address barriers affecting other groups.

Not surprisingly, SNAP has received a great deal of academic attention given its magnitude and importance. SNAP scholars have examined the program from multiple perspectives, for example the impact of macroeconomic changes such as unemployment and recession on take up rates (Figlio, Gundersen, & Ziliak, 2000; Edwards, Heflin, Mueser, Porter, & Weber, 2016; Andrews & Smallwood, 2012); and the program's impact on food security (Kim, 2016; Nord, 2012; Ratcliffe, McKernan, & Zhang, 2011), poverty (Hoynes & Schanzenbach, 2016), and health and nutrition improvement (Lee, Mackey-Bilaver, & Chin, 2006; Almond, Hoynes, & Schanzenbach, 2011; Mabli & Worthington, 2014). In addition, other strands in the literature have investigated barriers of enrollment that identified transaction costs, welfare stigma and lack of information as the key variables affecting participation of eligible households.

An area in SNAP research that remains underexplored is the variation of participation rates among states. It is important to question why and how some states have successfully enrolled all eligible households while others have not. Although the program is federally funded and general eligibility criteria are set by the U.S. Department of Agriculture, states are powerful in impacting the program's operation and outcomes. Hence this paper attempts to thoroughly investigate the variation among states in terms of SNAP policies and other socioeconomic and political factors in order to identify the leading causes of variation in participation rates. Indeed (Stacy, Tiehen & Marquardt, 2018) recommended further research on the effect of SNAP policy variation on participation rate as well as examining the impact of the different political environments on SANP policies.

In what follows, **Section II** presents the literature review on barriers to enrollment and the effect of party control on welfare policies. Also, the research question/s and

hypotheses are presented in that section. **Section III** discusses the methodology, estimation technique and model specifications. **Section IV** presents the independent variables and the justification of their presence in the model. **Section V** provides the data sources.

II. Literature Review, Research Question and Hypotheses

Literature on barriers to enrollment identifies three key factors that prevent eligible households and individuals from participating in SNAP and other welfare programs. These factors include the lack of information about the program and hence misperceptions, transaction cost⁵, and welfare stigma attached to welfare receipt.

Dickert-Conlin, Fitzpatrick, Tiehen and Stacy (2016) examined the impact of multiple SNAP policies on state monthly caseload. The paper grouped policies under those that affect eligibility, transaction costs, and stigma, and found that SNAP policies were responsible for 40% of the decline in caseload in the period between 1993-2000 mainly due to restricting the participation of non-citizens. In a similar vein, (Klerman & Danielson, 2011) examined the impact of SNAP policies, welfare policies and the economy on SNAP per capita participation on the state level on a monthly basis and found that SNAP policies have an effect on the size of caseload. Importantly, the study highlighted that some SNAP policies had a significant impact on increasing/decreasing caseload such as shorter certification periods (had a negative effect), but on the other hand some policies were found to be statistically non significant and also their effect is very small such as the vehicle exemption from asset test.

Information cost is one important factor that affects participation in welfare programs. Many eligible households do not participate simply because they are not aware of their eligibility or have some misperceptions about how the program functions. A recent study by Finkelstein and Notowidigdo (2018) found that providing information and assistance to nonparticipating eligible households was crucial in increasing take up

⁵ Some studies do not make a clear distinction between transaction cost and information, treating access to correct information as a transaction cost.

rates. Using a randomized control trial experiment on a sample of 30 thousand elderly eligible persons in Pennsylvania, the authors found that providing potential applicants with information increased take up rates by 11%, while those who received information as well as assistance in the application process resulted in an 18% increase in take up rates (compared to a 6% increase in take up rates among the control group). The study demonstrates how the absence of information or lack of assistance could significantly reduce enrollment. The information cost is of a great importance in the US welfare system given that in all programs enrollment is not automatic but rather eligible households have to apply and verify their eligibility. The only exception is Medicaid where social workers at hospitals may enroll eligible individuals when they are admitted to hospital facilities while they are uninsured (Cutler & Gruber, 1996). In the absence of correct information, eligible households might not be aware of their eligibility. According to a study by the USDA (Ponza, Ohls, Moreno, Zambrowski, & Cohen, 1999), three quarters of a 450 nationally representative sample of SNAP-eligible but non-participants individuals said that they did not enroll in the program because they did not know they were eligible. In a survey by the Economic Research Service of the USDA (Bartlett, Burstein, & Hamilton, 2004), 50 percent of eligible non-recipients indicated that they were not aware of their eligibility.

Policies aiming at providing information to eligible households are found to be influential in increasing enrollment in SNAP. Dickert-Conlin, Fitzpatrick and Tiehen (2012) found that after six months from broadcasting a federally funded nationwide radio advertisement campaign, caseload was 2 to 3 percent higher on the county level. Interestingly, they found no significant relationship between the advertisement campaign and new enrollments. The authors suggested that this contradiction could be explained by the fact that the campaign encouraged already participating households to stay in the program rather than encouraging new eligible households to participate.

Transaction costs, on the other hand, are an important factor affecting decision making in general and participation in public assistance programs in particular. Transaction costs include the time, effort and money an individual spends to acquire information about the program and household possible eligibility, to gather the necessary

documents, to fill out the enrolment application, to access the state agency to apply, and to report any financial or familial changes and recertification (Currie, Grogger, Burtless, & Schoeni, 2001). Ponza, Ohls, Moreno, Zambrowski and Cohen (1999) estimated that in 1999 the average application took about five hours to complete the process, which included at least 2 visits to the welfare office and a cost of about \$ 10.31 for the application and \$5.84 for recertification. Gorman, Smith, Cimini, Halloran and Lubiner (2013) highlighted that determining eligibility criteria is cumbersome and that the amount of benefits is not always known in advance, which make some eligible households reluctant to apply. Successful outreach programs to advertise the program and provide accurate and easily accessible information to eligible households are crucial in overcoming the transaction costs that hamper enrollment and participation (Dickert-Conlin, Fitzpatrick, & Tiehen, 2012; Kaye, Lee, & Chen, 2013) .

Welfare stigma is the third barrier that impacts participation in welfare and social assistance programs (Ranney & Kushman, 1987). As noted earlier, the US welfare system is a residual system (Andersen, 1990) and one of its key features is the stigma associated with receiving public assistance. This fosters a series of negative images about low-income individuals originating from the normative assumptions about the causes of their poverty and their behavior in general (Soss, Fording, & Schram, 2009; Schram S. , 2000). Welfare recipients are negatively constructed and portrayed as idle, lazy, unproductive and immoral system abusers and welfare dependents among others (Schram S. , 2000). Consequently, a household or an individual who is eligible to enroll in a program might be discouraged to do so to avoid being stigmatized (Stuber & Schlesinger, 2006).

Stigma is a “social construction that involves at least two fundamental components: (1) the recognition of differences based on some distinguishing characteristic, or “mark”; and (2) a consequent devaluation of the person” (Dovidio, Major, & Crocker, 2000). Stigma entails the feeling of being devalued based on specific attributes and characteristics that the stigmatized person possesses (Goodban, 1985). Eligible individuals may deliberately refuse to enroll in SNAP or other welfare programs because of the negative consequences that welfare stigma entails. Moffitt (1983) posited

that the eligible individual is rational and able to weigh the benefits and costs associated with his/her actions. While enrollment increases the benefits, welfare stigma represents a cost of participation. A rational individual, who is a utility maximizer, would make this calculation and may choose not to enroll to avoid being stigmatized. Stigma does not stop at merely stereotyping recipients; importantly, it affects how welfare recipients are treated by social workers, their social circle (including neighbors) and other family members, and by the public in situations when their *identity* as welfare recipients is revealed at check out counters in grocery stores. In addition, stigma has psychological ramifications harming a stigmatized person's self-esteem, self-respect and morale (Crocker & Quinn, 2000). Minimal benefits could be another reason why some eligible households might not participate. For example, in 2016, only 30% of those who would be eligible to receive the minimum benefit (\$16) participated in the program (USDA, United States Department of Agriculture, 2018)

On another front, the political party in control of government has an important effect on policy outcomes. Political parties have different ideological orientations that include a set of beliefs, values, conceptions and views of the state of the world. They conceive policy problems differently; explain the causes differently and hence the ways through which the problems are addressed differently (Epp, Lovett, & Baumgartner, 2014). However, political parties do not always adhere to their ideology, and instead choose to act strategically to maximize their chances of election and/or reelection. (Skocpol, 1995).

Party control of government was found to be significant in explaining change in social welfare policies, especially in the European context (for example: (Huber, Ragin, & Stephens, 1993; Kittel & Obinger, 2002; Garrett & Mitchell, 2001). But given the unique American two party system and nature of electoral competition, literature on the impact of party control in American states on policy outcomes has provided mixed results.

For example, Dye (1966) argued that economic development in states has a better explanatory power in determining policy outcomes than party competition. Erikson,

Gerald and McIver (1989) argued that while party control of government in industrialized democracies generally matters in predicting different socioeconomic policies such as welfare spending and income equality distribution, there is little correlation between party control and policies in the US states. Instead, public opinion and state ideology is better in explaining policies pursued by the winning party. The authors argued that the bipartisan system motivates each of the two major parties to lean towards the center to attract the median voter, whereas party ideology is not uniform (party positions respond more to public opinion than ideology). When the Republican Party is in power in a liberal state, the legislature will tend to produce more liberal policies in order to be rewarded and vice versa. For example, the Democratic Party in a conservative state is more conservative than the Democratic Party in a liberal state or even than the Republican Party in a liberal state (Erikson, Gerald C. Wright, & McIver, 1989, p. 731). Similarly, Beck (1982) argued that notwithstanding the ideological differences between the Democrats and Republicans, “parties represent differing combinations of groups at differing times” (p.93), and hence predicting a uniform policy position based on party control might lead to incorrect conclusions.

Political parties might even take positions that contrast with their ideologies or beliefs. For example, conservatives prefer a limited role for the government in redistribution as well as trust in market solutions presented in private insurance as more effective and efficient. However, conservative policymakers take a more pragmatic position towards social security spending in order not to lose the support of middle class (Skocpol, 1995, p. 7). Neither of the two parties will undertake substantial policy change in order to “avoid blame” and punishment of the electorate (Pierson, 2000). Pierson argued that social policy in the US is hence “path dependent” and cannot be easily changed, and major changes are only achieved through bipartisan agreements.

However, there is nothing that prevents political parties from embracing tacit strategies to impact policy outcomes that conform to the party ideology (Hacker, 2004). In the context of welfare programs, for example, the party in control on the state government may exercise the second dimension of power (Bachrach & Baratz, 1963) by taking no actions regarding removing barriers of participation and hence impact the

outcomes. Thus, another strand in literature supports the idea that partisanship has an important effect on welfare policies. Winters (1976) emphasized the significance role of political parties in the US in the following:

American politics is preeminently party politics. We define our candidates in party terms and our issues in party terms; in fact, we define ourselves politically in terms of the political party. Yet the consequences of these definitions have not systematically been appraised. Does it mean anything to have one political party control the government as opposed to another? (p. 629).

In a similar vein, Gerring (1998) argues that parties in the US are ideologically driven: “The major American parties have articulated views that were (and are) coherent, differentiated, and stable. American party history and, by extension, American political history at large have been irreducibly ideological” (p. 6). Ideology has shaped the political discourse and choices of each party. While the Republicans have focused on free enterprise, individual liberty, less government intervention, less taxation, less regulation, Democrats have “acted as the spokespersons for greater equality in the distribution of wealth, and the Republicans who demurred” (page 138).

Dye (1984) examined party policy linkages in the US states from 1950-1980 to assess whether party control of state government can explain variations in welfare spending (change in per capita state welfare expenditures that reflect both the level of expenditures per recipient and the proportion of the population deemed eligible to receive such benefit). Dye used different partisanship variables (governorship, democratic governor or legislature, democratic full control of the legislature) and classified the states to competitive, non-competitive and mixed according to interparty competition and voter participation. He found that in twenty states, Democratic control of governorship was associated with higher welfare spending, in three states it was negative association and in the remaining there is no effect.

In a famous article, Hibbs (1977) argued that partisanship has a significant impact on the socioeconomic policies. Specifically, Hibbs found that in the postwar era, leftist parties in the US were associated with more inflation and less unemployment than right-

wing parties; a choice that is favorable to low-income groups, adding that the “the Democratic party has relatively close connections to organized labor and lower income and occupational status groups, while the Republican party is viewed as being more responsive to the interests of capital or business and upper income and occupational status groups” (p. 1475).

Kelly and Witko (2012) applied a power resources theory framework to examine how states’ government impact inequality through redistributive policies. While the PRT is primarily used to examine comparative welfare states using class identities (labor versus capitalists), the authors argued that income-based power resources resemble class-based power resources (since class and income are highly correlated). In addition, while the PRT classifies political parties into left and right parties, this classification does not perfectly fit the US partisanship context. However, the Democratic party is considered a left leaning party when compared to the Republicans and evidence suggests that low-income groups are more affiliated to the Democrats than Republicans.

Research gaps

As shown above, the SNAP literature is mostly focusing on enrollment and how the changes in policies affected take up rates. However, participation rate is an important area that has been overlooked. In addition, while SNAP policies have been examined so as to their effect on enrollment, they were not examined regarding their different effects on different populations (groups), in other words, we are not fully aware of how powerful each SNAP policy is in affecting a particular group. For example, do working poor households respond similarly to SNAP policy changes as will do other SNAP recipients?

On the other hand, the attention is always given to economic or policy variables, which leaves the impact of politics and the political environment not fully understood. SNAP is a social policy that is likely to be affected by the political climate, ideological positions, etc. This doesn’t only include policy design and making, but also extends to affecting policy implementation and program administration. Furthermore, while SNAP policies vary across states, it is still unclear why states vary in their policies in the first place.

Therefore, this research proposal raises the following research questions:

- 1- What is the impact of party control of government and SNAP policies on SNAP participation rate?
- 2- What is the impact of party control of government on SNAP policies?
- 3- What are the leading factors causing the variation in participation rates among states?
- 4- How are working poor households affected by SNAP policies? And which policies seem to have the largest effect on participation rate?

Hypotheses

In light of what has been presented, this paper will test the following hypotheses:

Hypothesis 1: Party in control of government has a significant impact on SNAP participation rate, holding all other variables constant.

Hypothesis 2: SNAP policies affecting barriers to enrollment such as stigma, transaction and information costs have a significant impact on participation rates in States, holding all other variables constant.

Hypothesis 3: Party in control of government has a significant impact on SNAP policies that affect enrollment in the program, holding all other variables constant.

Hypothesis 4: Particular SNAP policies affect the participation rate of working poor households different than the national participation rate.

III. Methodology, Estimation Technique and Model Specification

To estimate the impact of party control on government and SNAP policies on participation rates in US states, I will use a time fixed effects Ordinary Least Squares (OLS) estimator using state-level panel data from 1994 to 2016. The model can be represented in the following form:

$$Y_{st} = \alpha + \beta_1 PARTY_{st} + \beta_2 IDEO_{st} + \beta_3 EBT_{st} + \beta_4 TRANCOST_{st} + \beta_5 INFO_{st} + \beta_6 X_{st} + \beta_7 YEAR_t + \varepsilon_{st}$$

Where Y_{st} is SNAP participation rate in state s in year t (the dependent variable). $PARTY_{st}$ is a vector that includes two dummy variables: Republican full control of government (both houses and governorship) and Republican partial control of government (the two houses and governorship are shared by both parties). $IDEO_{st}$ is a citizen ideology index that takes a value from 0 to 100 (conservative to liberal). EBT_{st} is a dummy variable indicating whether a state started a statewide EBT system in a given year, $TRANCOST_{st}$ is a vector of variables to proxy for transaction costs such as whether the State uses broad based eligibility criteria to enroll the recipients of SSI and TANF in SNAP, the average duration of certification⁶. $INFO_{st}$ is also a vector of two variables that proxy for information cost and includes whether the State runs a call center to provide information to applicants and recipients, and also the expenditures on outreach programs. X_{st} is a vector of control variables in state s in year t and includes unemployment growth rate, population growth rate, median household income growth rate, poverty rate, and state racial and ethnic composition. $YEAR_t$ is a year dummy to control for time effects and year specific shocks, and ϵ_{st} is the error term.

OLS has proved to be the best estimator under certain assumptions (Studenmund, 2014). If those assumptions are not satisfied the estimated results are either non consistent or unbiased. In addition, the time dimension of the panel data analysis added some more assumptions to fulfill. In the following points, I address how these assumptions will be satisfied.

- For the model to be correctly specified, proper functional form should be used and relevant variables should be included in the model. Incorrectly specified model violates the Gauss Markov assumptions and result in biased coefficients resulting from an Omitted Variable Bias (OVB). As such, the model proposed will be mainly guided by previous theoretical and empirical literature to select the relevant variables as well as to use the proper functional forms.

⁶ A detailed description of all variables included in the model is presented in section III.

- **Multicollinearity** occurs when two or more independent variables are collinear. It is usually predictable that some of the independent variables in this model will be so (such as transaction cost variables, unemployment and poverty,). Thus having multicollinearity is not itself a violation to OLS assumptions, but a perfect (pure) multicollinearity is. Pure multicollinearity occurs when two or more variables are perfectly explaining one another. If present, multicollinearity leads to overestimating the standard errors in the model and consequently producing artificially low t-statistic, leading to a possible type II error (accepting the null hypothesis when it is not true) (Hill, Griffiths, & Lim, 2011). It is expected that some variables in the proposed model above might be correlated. Based on the test results (using pair wise correlation coefficient to detect correlation or Variance Inflation Factor (VIF) and using the critical threshold, a decision will be made as to whether leave the correlated variables (if the significance is not affected so much) or the necessity to remove one or some of them. Also, another possible solution is to include a lag of one of the variables that is collinear with another variable at the same year.
- Time series assumptions include that variables included in a panel regression should be **time stationary**, which means that they should not be following a specific trend over time, but rather change according to a stochastic process (Studenmund, 2014). Time non-stationarity problem usually arises when the variables used in the model are represented (measured) in levels such as GDP level, population count, etc. However in the proposed model, the variables are measured as a percentage change such as population growth rate, unemployment rate. Furthermore, the main variables of interest are non-numeric (party control of government) and hence time stationarity is not expected in these variables. The main problem with violating the time stationarity is that it tends to give a false result that there is a significant relationship between the variables in question while this is not true. Variables could be spuriously correlated; rising or declining simultaneously following a similar pattern, but in reality they are not causing the change in each other. Consequently, when variables are non-stationary they inflate the t statistics and bias the beta coefficient of the independent variables in

question. *Time stationarity* could be detected using an eyeball test to visually inspect the data. In addition, Hadri Lagrange multiplier stationary test (Studenmund, 2014, p. 333) is commonly used in strongly balanced data to detect time stationarity. To avoid this problem in the current model, all variables are represented in the first difference, which is the percentage change from the previous year. In addition, a time dummy variable is included as an independent variable. In fact, using time dummies was preferred than adding a time trend given that the former can also controls for year specific shocks, which is predictable in this data. Shocks are events that have significant and lingering effect on the dependent variable such as the 2009 recession.

- In choosing whether to use *fixed or random effects*, some points need to be taken into consideration. First, using fixed effects help in controlling Omitted Variable Bias resulting from unobserved characteristics that are constant over time but vary across units (Wooldridge, 2006, pp. 485-486). Kittel and Winner (2005) highlighted that using country and time fixed effects leaves only the ‘pure’ effect of independent variables without ‘exogenous noise’. On the other hand, including fixed effects in the model might affect both the signs of the coefficients and their significance (Kittel & Winner, 2005). Importantly, they absorb the variables of interest and eliminate the variation between cross section units (Plumber, Troeger and Manow, 2005). In this research proposal, the goal is to examine the variation between states, so fixed effects might not be useful. In addition, if one of the independent variables is constant over time (which is expected in some variables), the dummy variable fixed effects variable will be dropped. To determine if fixed effects will be used, tests will be done and random and fixed effects model will be run and compared. The Hausman test will be used to determine if the random effects model is consistent. The F test will be used to determine the joint significance of the cross section dummies (n-1). If they are significant it means that those unobserved characteristics are different across the units but constant over time and hence fixed effects model is required.
- *Regarding errors structure*, panel models are vulnerable to two fundamental problems: heteroskedasticity and serial correlation (Wooldridge, 2013, p. 412).

Heteroskedasticity is a violation of OLS assumptions. Although it does not bias the coefficient, it underestimates the standard errors and hence significance is artificially inflated leading to overly optimistic results in estimation (Studenmund, 2014, p. 102). Heteroskedasticity occurs when the variance of errors of observations is not constant and follows some specific trend that doesn't follow the OLS regression best fit line.

- **Serial correlation** is a violation to the assumptions of time series regression that occurs when observations of the error term are correlated with each other over time (Studenmund, 2014, p. 98). It is problematic as in static models, it usually leads to underestimating the standard errors and hence can give overly optimistic results (Wooldridge, 2006, p. 371). Pure serial correlation does not affect the beta coefficients of independent variables, however it underestimates the standard errors leading to an artificially high t- statistic and consequently might lead to type I error, rejecting the null hypothesis when it is true. A **Wooldridge test** is used to show if panels suffer from serial correlations. Two possible solutions to this problem are using a panel corrected standard errors model or panel clustered standard error model. PCSE model can be preferred given that it can also controls for higher order serial correlation (Beck & Katz, 1995), which is suspected in the data. Since the data used in this model is yearly data, first order serial correlation is the most common form.

IV. Dependent and Independent Variables

- State as the unit of analysis

The unit of analysis in this study is the state. In explaining why they use the state as the unit of analysis in explaining the impact of interparty competition and economic variables on welfare policies, Dawson and Robinson (1963) described the states as “all systems with written constitutions, with authority divided among legislative and judicial branches. They all have bicameral legislatures... Thus, by using the American states as units of analysis we can hold the basic system variables constant, concentrating attention on the relationship between process and policy”. (p.268)

Literature suggests that even though the federal government funds many social assistance programs, states have the power to impact the outcomes of these programs through the partial funding as well as controlling the administration of the programs' design (Meyers, Gornick, & Peck, 2001). States enjoy considerable power over issues such as identifying eligible recipients, certification, recertification, applying waivers, etc, all of which represents important choice architecture that influence program participation. For example, the convenience of the local offices and the quality of the interaction between staff and applicants are forms of administrative practices and bureaucratic structures that clearly affect participation (Meyers, Gornick, & Peck, 2001). States can also extend the time limit for unemployed able-bodied adults without dependents by requesting waivers from the USDA (Bolen & Dean, 2018). States can also impact policy outcomes through small details that cannot be easily observed. Hacker (2004) for example argued that welfare retrenchment has taken place in the US during the seventies not through big policy changes but informal rules and practices such as stealth, obstruction and indirection.

- **Dependent variable**

SNAP participation rate

It is defined as the percentage of eligible SNAP households who participate in the program (U.S. Department of Agriculture).

Working Poor participation rate

It is the percentage of eligible working poor households who actually participate in the program.

- **Independent Variables**

- 1- Party control of government

This is a categorical variable that is coded 0 if the Republican party has full control of government (both houses and governorship), 1 if neither of the two parties has full control (the two houses and governorship are split between parties), and 2 if the Republican party does not have control of government (Democrats have full control).

Two dummy variables from this categorical variable will be included in the model as compared to the third, which is the baseline category. As highlighted in the theoretical assumptions, it is hypothesized that party control of government has a significant impact on participation rates. The study will experiment different interactions between this variable and citizen ideology index to identify whether certain combination of political variables might have different effects on participation rates.

2- Citizen Ideology Index

This index has values from 0 to 100 where zero representing the most conservative value, and 100 the most liberal position. As suggested by other studies, state ideology is important in determining policy outcomes. The problem with state ideology indexes is that they are a composite of variables that include party in control of government, and hence such variables might have multicollinearity issues with party control variables used in this model. Instead, I propose to use the “revised 1960-2016 citizen ideology series” developed by (Berry, Ringquist, Fording, & Hanson, 1998), which is based on the ideology of each Congress member and the ideology of a hypothetical challenger and election results. The government ideology index that the same authors developed is basically the same as the citizen ideology index but in addition to the percentage of state legislature’s seats held by every party. Therefore, using the citizen ideology index is preferred as it separates the effect of party in control of government from the state’s citizen ideology. In all cases, the availability of data will allow experimenting different model specifications to investigate the impact and significance of different political variables on participation rate.

3- Eligibility and Transaction Costs

The following are SNAP rules and policies applied by states and will be used to proxy for transaction cost. Since these policies reduce transaction costs, it is predicted that their presence is associated with higher participation rate. While they will be used as individual variables, they can be indexed and grouped under one or more variables.

- Average certification period

A SNAP recipient is required to report on his or her circumstances to determine if eligibility criteria still apply. States' policies vary regarding how frequent SNAP recipients have to recertify their status. Throughout the time period covered by this study (1996-2016), the certification period ranged from 3.1 to 15.2 months. It is predicted that a longer certification period is associated with higher participation in the program.

- Broad based eligibility

This is a dummy variable that indicates whether or not a state in a given year uses broad based eligibility criteria that allow individuals participating in TANF to be automatically enrolled in SNAP without requiring further asset or income tests. The SNAP policy database, which is used in this research, provides monthly data, so a state might have applied the broad based eligibility criteria in some months during the year. Therefore, a state will be coded 1 (having a broad based eligibility criteria) if it applied it for more than 6 months during a given year.

- Combined Application Project

This is a dummy variable that indicates whether or not the state applied a Combined Application Project for recipients of Supplemental Security Income (SSI) so they become almost automatically enrolled in SNAP. This is another form of a transaction costs where applying is made easier for eligible participants in another welfare program. In the presence of such combined applications, it is easier for eligible households to apply and receive benefits. SSI provides income support to low income 65+ and older individuals who usually do not have social security benefits as they were not uninsured. Although SSI recipients are categorically eligible for SNAP, sometimes it is difficult for elderly and people with disabilities to apply. CAP usually works in collaboration with SNAP state agency and Social Security Administration offices. While applying for SSI, applicants may be informed of their eligibility for SNAP and enrolled automatically. Or sometimes, SNAP offices receive data on SSI recipients and contact them if they are eligible for SNAP.

- Telephone interviews

These are two dummy variables that measure whether the state obtained a waiver from the US Department of Agriculture to use telephone interviews instead of face-to-face interviews during initial enrollment and at recertification, without having to document household hardship. It is assumed that replacing the face-to-face interview with a telephone interviews reduces transaction costs and hence improves participation rates. Both variables are coded 0 and 1. (States that did not have waiver, and states that had waivers at least in some parts in the state.)

- Online application

This is a dummy variable indicating whether the state has an online application system or not. Online applications are more convenient and easier for some eligible households/individuals to use and hence in the presence of an online application system, participation rates are expected to be higher.

- Simple reporting

This is a dummy variable indicating whether or not the state uses the simplified reporting option that reduces requirements for reporting changes in household circumstances.

- Legal non citizen adults' eligibility

This is a dummy variable that takes the value of 1 if the state considers non citizens adults aged between 18-46 and are legally present in the US eligible to participate in SNAP or State funded food assistance programs as long as they satisfy SNAP eligibility criteria, and 0 if otherwise. Generally it is predicted that allowing this group to participate in the program has a positive impact on enrollment and participation rate. However, it is predicted that this effect is probably more intensified in states with higher proportion of Hispanic population or in states where the Democratic Party has control over the legislature. Therefore, the model will experiment different interactions between those variables to hopefully reveal some useful insights.

- Vehicle exemption

This is a dummy variable that takes the value of 1 if the state exempts all vehicles that the household owns from the asset test that determine eligibility and 0 if

otherwise. This is one of the variables that is predicted to be associated with higher participation rates given that it broadens eligibility.

4- Information Cost

The following three variables will be used as proxy for information costs.

- Call centers

This is a categorical variable indicating whether the state operates a call center to provide assistance and answers to applicants and participants. Availability of a call center helps promote the program and provides more information to eligible households on eligibility, rules and the application process. Consequently, it is predicted to be associated with higher participation rates. The data is coded 0 if the state does not operate a call center, 1 if the state operates a call center, 2 if the state operates a call center in some parts of the state. Two of these categories can be included as dummy variables with the third is a baseline (omitted) category.

- Outreach spending

This variable measures the sum of federal and state expenditures on SNAP outreach programs each year. Since this variable is recorded in the database in levels (dollars), it could suffer from time stationarity. Hence this variable could be measured using the first difference of outreach spending (annual rate of change in spending). Designing and implementing outreach programs are among the key powers delegated to states in administering the SNAP. Outreach programs basically aim to enroll eligible households by reaching out to them and informing them with their eligibility. Well-designed and implemented outreach programs require higher spending, and consequently increasing spending is predicted to have a positive impact on participation.

- Federally funded TV or Radio SNAP advertisement

This is a dummy variable indicating whether the state in a given year had broadcasted a federally funded TV or Radio SNAP advertisement.

5- Welfare Stigma

- Electronic Benefit Transfer (EBT)

This is a dummy variable indicating whether a state in a given year has an EBT system in place. States started statewide EBT systems at random months in a given year, so in coding this variable, states that had an EBT for less than 6 months will be treated as having no EBT that year. For example, if a state started an EBT system in August in a given year will be coded zero this year and 1 starting the coming year.

The 1996 welfare reform mandated all states to implement an EBT system by 2002. EBT replaced food vouchers and evidence suggested that it is associated with higher participation in the program. States differed at the time when they implemented a statewide EBT system. However, there is no evidence in literature suggesting that fast or late adoption of EBT by states is motivated by the desire to increase participation. One of the causes of this variation could be states' different administrative and financial capacities in transforming to an electronic system with complexities relating to procuring contractor design services, carrying out the system and integrating it with the USDA and state SNAP offices (Stegman, Lobenhofer, & Quinterno, 2003).

In fact, the basic goals of using EBT instead of food vouchers were to reduce fraud and administrative costs. The transformation to EBT occurred in a general government movement towards a paperless system and government reinvention (Humphrey, 1996). Although research suggests that using EBT is associated with higher participation rates since it reduced welfare stigma, it was not one of the goals of the transformation to EBT. The actual legislation proposal that included using EBT as a substitute to the food vouchers highlighted reducing costs as well stopping abuses of the system by some recipients as the reasons for proposing using EBT (Congressional Record E 1148, 1996).

- Fingerprinting

This variable takes one value from 0-2, where 0 indicating that the state does not require fingerprinting applicants, 1 where the state requires fingerprinting in some parts, and 2 where fingerprinting is applicable statewide. Fingerprinting is considered a form of stigma and hence predicted to have a negative impact on participation rate.

- Drug felons participation

This is a dummy variable that takes the value of 1 if the state allows drug felons to enroll in snap in a given year and 0 if otherwise. This variable is important for two reasons. First allowing drug felons to participate has intuitively a positive impact on caseload and

more importantly one participation rate given that this group is usually stigmatized and face difficulties in finding jobs and hence are usually among eligible households. In addition, this policy provides some insights on political and cultural sentiments towards

6- Unemployment

This variable measures the percentage of unemployed individuals in the labor force of each state in a given year. Unemployment is associated with higher enrollment. Households, whose breadwinner lost his or her job, are more likely to have economic hardships and hence are more likely to enroll in SNAP. Most studies suggest that unemployment is a significant variable in explaining the increase in take up rates in social assistance programs (Figlio, Gundersen, & Ziliak, 2000). It is plausible to assume that the likelihood of household enrollment in one or more welfare program increases if the household does not have a working member. Also, when the breadwinner of the household loses his/her job, the household will resort to social assistance programs to compensate for the job loss. For example, Kabbani and Wilde (2003) found that a 1% decrease in unemployment rate explained 27% of the decline in SNAP participation. Similarly, Currie, Grogger, Burtless and Schoeni (2001) found that unemployment explained 20% of the decline in caseloads. Hanson and Gundersen (2002) used time series data from 1976-2010 and found that a 1% increase in the unemployment rate led to a nearly 1.5 million- person increase in SNAP participation. Ganong and Liebman (2013) found that changes in local unemployment can explain at least two-thirds of the increase in enrollment from 2007 to 2011. Pan, Jensen, Fuller and Mohanty (2006) examined the local labor market in Iowa, and found that rising unemployment is associated with higher participation rates in TANF (called Family Investment Program in Iowa) among eligible households.

The majority of SNAP recipients are indeed low-income households, which indicating that a household member has a job. Evidence shows that many SNAP recipients join the program temporarily during times of unemployment (Andrews & Smallwood, 2012) or recession (Slack & Myers, 2014; Pilkauskas, Currie, & Garfinkel, 2012; Edwards, Heflin, Mueser, Porter, & Weber, 2016).

On the other hand, while unemployment is intuitively associated with higher participation we might also predict that in some situations that the opposite could be true

or at least for certain populations, rising unemployment leads to lower probability of participation. SNAP imposes a time limit on benefits as well as work restrictions particularly for able-bodied adults without children. This group is arguably less educated and less skilled and hence, at times of unemployment or recession, highly likely to lose jobs – and hence unable to fulfill SNAP’s work requirements. A study by Cheng (2006) found that high unemployment in states with more restrictive TANF policies correlates with higher percentages of unemployed women leaving the program and living below the poverty line.

7- Per capita income

This variable measures the percentage change in per capita income in each state in a given year. To avoid time stationarity, per capita income will be measured in rate of annual change. This variable is important since SNAP is a means tested program where eligibility is determined based on households’ or individual’s income and financial assets. Some studies found that the majority of SNAP recipients are those whose incomes are below 100% of poverty line indicating a strong association between income and participation in the program (Coe & Hill, 1998).

8- Poverty rate

This is the percentage of the state’s population living under the poverty line in a given year. Participation rate is usually predicted to increase when poverty rates increase. However, the effect of increases in poverty on participation rates may also be uncertain. Increasing poverty also increases the number of eligible households and hence increases the denominator of the participation rate equation.

9- Racial and ethnic composition

The model includes two variables on the proportion of Hispanic population in the state as well as the proportion of African Americans. African Americans as well as legal immigrants, especially of Hispanic origin, have higher poverty rates than the national average (Iceland, 2013). In addition, both groups also suffer from high food insecurity (Sano, Garasky, Greder, Cook, & Browder, 2011). Consequently, both groups are more likely to participate in the program holding all other variables constant. Therefore, a state

with more legal immigrants is expected to have higher number of eligible households. However, there is an argument that an increase in the number of minorities prompt governments to become more repressive and for policies to become more exclusionary to deter other immigrants and racial minorities from participation or moving to the state (Reese, Ramirez, & Estrada-Correa, 2013). Importantly, states' welfare policies towards immigrants are commonly motivated by and reflective of public and political sentiments towards accepting immigrant and extending welfare benefits to them (Xu & Zhu, 2014). In addition, some legal immigrants might not be aware of their eligibility in the absence of well-designed state outreach programs.

- SNAP Policy Index

The SNAP policy index is recently developed by the ERS (Stacy, Tiehen & Marquardt, 2018) and includes ten policies that were found to be individually significant in affecting caseload. The index has two versions. The first one uses equal weight for each of these variables. Policies are classified to accommodative and non-accommodative. A state that adopts one accommodative policy receives +1 and -1 for a non-accommodative policy. The second versions uses a weighted scale based on the effect of each policy on caseload using regression weighted index. It is hard to tell how well the index will explain variation in participation rates. While we might expect that a state with a high score in the index will also have a higher participation rate, this is not always the case. For example, California scores 8.61 in the policy index (scores ranges from 1 to 10 with 10 being the most accommodative policies), on the other hand participation rate in that year was as low as 73% (almost 10% lower than the national average). South Carolina got the highest score in the index 8.81 in 2014, yet participation rate was 82% which is lower than South Dakota that had a 93% participation rate in 2014 while having one of the lowest SNAP policy index scores 6.81.

The index will be used in the model to compare its significance with the effect of individual SNAP policies and to evaluate its overall validity and relevance in explaining variation in participation rates.

V. Data sources

This paper will use a pooled cross section data developed from different cross sectional and time series data obtained from multiple resources. The panel extends from 1994 to 2016 given that data on SNAP participation rate exists only for this time period.

- SNAP participation rate and working poor households' participation rate: data will be obtained from the "Reaching Those in Need" annual report published by the Food and nutrition Service of the USDA. The data developed by Mathematica Policy Research and includes estimated participation rates for every state as well as estimated bounds of confidence intervals.
- Party control of government: Data on party control of state's legislatures, and the party affiliations of the governors will be obtained from Ballotpedia's "Who runs the States, Partisanship Results, Partisanship Control of State Senates" public data published online⁷.
- Citizen ideology index is obtained from the revised citizen ideology series 1960-2016 by Berry et al. (1998).
- Data on population growth, poverty rate, per capita income and unemployment are obtained from the US Census Bureau's Small Area Income and Poverty Estimates.
- Racial and ethnic composition will be obtained from US Census data.
- Data on dates of implementing a statewide EBT system will be obtained from the USDA's 'EBT Status Report by State'.
- All data on SNAP policies included under transaction and information costs is obtained from SNAP Policy Database (Economic Research Service), which provides information on state-level SNAP policies relating to eligibility criteria, recertification, reporting, availability of online application, and others. Data are provided for all 50 states and the District of Columbia for each month from January 1996 to December 2016. The database draws on policy information from a wide variety of sources, including surveys by USDA's Food and Nutrition

⁷ The data set can be found here : https://docs.google.com/spreadsheets/d/1Lxeot3i-sYXJo1mPg4Nbe-GFUujg0aEvUf_bgN8j7Q/edit#gid=1864331468

Service (FNS), national and state policy research organizations, state policy manuals, and news articles.

Essay II

Assessing the Impact of EBT on SNAP Participation among Different Groups

Difference-in-Difference Model using SIPP

I. Introduction

As highlighted in the first essay, participation rates not only differ between states, but also within demographic and socioeconomic groups, suggesting that barriers to enrollment do not affect eligible households in the same way. Participation rates are particularly lower among working poor households (only 42% of eligible households with incomes above 100% of poverty line, and the elderly (only 45% of eligible elderly adults participate) (Cunyngham, 2018). This is not to say that every barrier only affects a specific group, but perhaps some barriers have a more intense impact on a particular group. For example, Finkelstein and Notowidigdo (2018) found that lack of information and misconceptions about the program is important in lowering participation of elderly eligible individuals. It could also be practical considerations that might affect enrollment such as restricted office hours, application interviews, reporting, etc. (Bartlett, Burstein, & Hamilton, 2004). In addition, welfare stigma seems to play an important role in barring working poor households (households with a working member but financially eligible to participate) from enrollment.

This paper argues that welfare stigma is a key variable behind the low participation rates of working poor households in SNAP. Indeed stigma has been identified in literature as one of the key variables affecting participation in social assistance programs (Moffitt, 1983; Stuber & Schlesinger, 2006). In particular, means-tested programs use income and financial assets thresholds as eligibility criteria to receive benefits, and hence the recipients are self-identified as poor. This entails a series of negative images about low-income individuals originating from the normative

assumptions about the causes of their poverty and their behavior in general (Ingram, Schneider, & deLeon, 2007; Schneider, Ingram, & deLeon, 2014). Consequently, a household or an individual who is eligible to enroll in a program might be discouraged to do so to avoid being stigmatized. Although the working poor are commonly framed as a deserving group since they are income earners and do not rely entirely on welfare, welfare stigma is attached to whoever receives welfare benefits regardless of his/her work status.

As highlighted in the general introduction, the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWOA)- also known as the welfare reform- mandated that all states implement an Electronic Benefit Transfer (EBT) system by 2002 to replace the food paper voucher system. The key goal behind this transformation was reducing fraud and administrative costs. In addition, studies also suggest that using EBT cards could have possibly reduced welfare stigma and consequently higher enrollment. In this regard, I plan to examine the impact of using EBT on eligible working poor households to determine the significance of welfare stigma on this particular group.

This paper benefits from the temporal variation of implementing a statewide EBT system among the states which provides a quasi- experimental environment where the impact of EBT on the participation of working poor households can be examined properly.

In addition, using household data is useful in controlling for other demographic variables that might have an important impact on participation. Recipients of SNAP are a diverse group of low income and poor households who represent a wide variety of socioeconomic and demographic backgrounds. In addition, recipients reside in urban and rural places which also has an impact on other variables such as living costs, access to work, education, markets, etc. Also, level of education is another key difference that exists among SNAP recipients which obviously affects their chances of employment, income, work stability, etc.

All these differences that exist among SNAP recipients suggest that they contribute to decisions made by households/individuals regarding participating in SNAP. Using household data is indeed better in capturing the effect of those socioeconomic and demographic variations among groups and also enables in conducting comparisons

among those groups in terms of the effect of EBT on the participation of each one of them. Controlling for such variables could help in developing a better specified model where the effect of EBT on participation will not be overstated by omitting important variables. Given that, this essay raises the following research question:

- 1- What is the impact of implementing the Electronic Benefit Transfer (EBT) system on the participation of working poor households in the Supplemental Nutrition Assistance Program (SNAP)? And how does that impact differ across other demographic groups?
- 2- What are the households' characteristics (education, ethnicity, location, etc.) that determine participation in SNAP?

II. Estimation and Model Specification

I propose to use a difference-in-difference (DD) design to estimate the impact of using EBT on the participation of working poor households in SNAP. The treatment will take place on the state level

- Treatment group: eligible working poor households in the state of Alabama that started a statewide EBT implementation in November 1997
- Control group: eligible working poor households in Tennessee that did not start an EBT at the same time.
- Treatment: the implementation of the EBT
- Treatment effect: $[E(Y_{\text{after}}|D = 1) - E(Y_{\text{before}}|D = 1)] - [E(Y_{\text{after}}|D = 0) - E(Y_{\text{before}}|D = 0)]$
- Time before and after: Alabama started implementing an EBT system in November 1997. So the two time periods I will examine are from November 1996 to November 1997 (before) and from November 1997 till November 1998 (after), taking into consideration that Tennessee did not start EBT during that period.

Alabama is selected given that it is the first state to implement a statewide EBT system in November 1997. To reduce selection bias, the control group was selected from Tennessee given that both states share similar characteristics and hence the control and

treatment group do not differ systematically. In addition, Tennessee did not start a statewide EBT implementation until August 1999. Importantly, pilot EBT programs also started in Tennessee in November 1998.

Both states belong to the same region with similar political institutions and culture. Unemployment rates were very close in both states (around 5%). Also, average poverty rates from 1995-1997 in both states were close (13.6 in Alabama and 15.1 in Tennessee) while in Mississippi, for example, it averaged above 20 percent (Joseph Dalaker & Mary Naifeh, 1998). Both states were also comparable in terms of population size (4.5 millions in Alabama and 5.5 millions in Tennessee) as well as racial and ethnic composition. Furthermore, unlike neighboring states, both Alabama and Tennessee provide SNAP and AFDC/TANF benefits through the same EBT card making it a more encouraging way to enroll eligible households. Importantly, the difference in SNAP participation rates between the two states was modest before the introduction of EBT is modest.

The difference-in-difference technique is simple; comparing the average outcome (in that case participation rates) of a treatment group before and after using the EBT, with a similar group that did not receive the treatment. The paper will benefit from the time variation among states in implementing the EBT, which provides a quasi experiment setting. This approach has been used in important SNAP studies in assessing the impact of SNAP and FSP on different economic behaviors of the recipients such as food and non-food consumption, labor force participation, health outcomes, etc.- benefiting from the time variation of implementing FSP (see, for example, Hoynes & Schanzenbach, 2012; Hoynes & Schanzenbach, 2009; Almond, Hoynes, & Schanzenbach, 2011).

A linear probability model will be used where the outcome (the eligible working poor household participation in SNAP) is binary that can only take the value of 0 or 1. It **can be specified as follows:**

$$\text{Partcept}_{hst} = \alpha + \beta_1 \text{POST} + \beta_2 \text{EBT}_t + \beta_3 (\text{POST} * \text{EBT}_{hst}) + \beta_4 \text{X}_{hst} + \beta_5 \text{AFDC}_{hst} + \beta_6 \text{TRANCOST}_{st} + \beta_7 \text{INFO}_{st} + \varepsilon_{hst}$$

Where Partcept_{ist} , the dependent variable, is the probability that an eligible household (h) participates in SNAP in state (s) at time (t), POST is the dummy variable for post treatment time period, $(\text{POST} * \text{EBT}_{st})$ is the treatment effect whose coefficient measures the impact of EBT on the outcome variable. EBT_t is an indicator of treatment i.e. the introduction of EBT. X_{ist} is a control for household characteristics. The other control variables include AFDC_{ist} which is a dummy variable if the household was enrolled in AFDC, TRANCOST_{st} is a vector of variables to proxy transaction costs (as listed in the previous essay proposal) in state s at time t . INFO_{st} is a vector of two variables to proxy for information cost (as listed in the previous essay proposal) in state s at time t and ϵ_{ist} is the error term.⁸

▪ **Control variables**

- 1- The control X includes the household's observed characteristics such as years of education, race, language spoken at home, work status, food security, location (urban-rural), years of residence in the US (to determine eligibility according to the PRWORA), number of children, elderly, and disabled persons in the household. Including such variables is essential since they influence the household's behavior including participation in welfare programs. For example, language could be barrier of enrollment for eligible immigrants. Also, change in family composition could possibly affect the household decision to participate or affects the household eligibility. While not the main focus of this paper, those variables might provide very insightful perspectives on the impact of demographic variables on enrollment. In addition, it is important to investigate the interactive effect of EBT and those variables that could possibly explain how different groups are affected differently by SNAP policies.
- 2- Participation in other programs: the welfare reform act (PRWORA) eliminated the AFDC, introduced TANF, and changed the eligibility criteria of SNAP.

⁸ The proposed model is static, however given that the data is monthly and the change in households' behavior might take time after the introduction of EBT, another dynamic model will also be used. Determining how many lags to be added depends on the average application and certification period that it took the household after making a decision of participation. The dynamic model assumes that the effect of introducing EBT or any other changes in the control variables might not be immediate.

Therefore, a household's decision to participate in SNAP is likely to be affected if the household was a previous AFDC recipient or newly enrolled in TANF.

- 3- Transaction and information costs are also important determinants in explaining enrollment hence those variables are added to control for any observable variables that impact the outcome of interest.

In light of the theoretical assumption about the reduction of welfare stigma by eliminating food vouchers, the paper hypothesizes that EBT introduction (EBT_{st}) has a significant positive treatment effect on the working poor households' participation in SNAP, which means that there is higher probability for a household to participate in SNAP after the introduction of EBT.

- **Robustness checks**

All OLS and Time Series assumptions will be tested to ensure that the model provides the most efficient and unbiased estimation on the impact of EBT on SNAP participation⁹.

Since the common trend assumption in DD is crucial, a falsification test will be done using the 1984-1993 SIPP panel to ensure that common pre-treatment trends did not exist in both states. Also, following Hoynes and Schanzenbach (2009), I will conduct a placebo test on another sample of high-income households, which are ineligible to participate in SNAP in both states and hence are not impacted by the introduction of EBT. The same model specification will be used with the hypothesis of a treatment effect that is equal to zero.

- **Problems with Linear Probability Model and the alternative**

A linear probability model is preferred since it provides an estimate of the marginal effect of an event (variable) on the probability of a certain outcome to occur. In other words, the interpretation of the results is straightforward; EBT increased or decreased the probability of household to participate in SNAP by some percent. On the other hand, linear probability models could have serious problems that violate OLS assumptions. The first problem is that the outcomes might not be restricted to 0 and 1 and hence non-sensical

⁹ More details on OLS and Time Series assumptions in section II.

given that the event is either happen or did not happen. The second problem is heteroskedasticity, which is a violation of OLS assumptions, however it could be corrected using robust standard errors or clustered standard errors. The third problem is the non normal distribution of residuals, which are going to be binomially distributed since there are only two possible outcomes.

If those problems exit, the alternative to the Linear Probability Model will be a Probit model which is a maximum likelihood estimator. This type of estimators overcomes the problems of the LPM mentioned above, but the interpretation of results will be different. The output is presented in log –odds units which is only indicative of the direction of the relationship but does not enable in capturing the magnitude. Using, odds ratios however can provide more meaningful interpretation in terms of how much likelihood the outcome can change (participation in SNAP) given a change in the independent variable (EBT).

III. Data Sources

This research will utilize the 4-year 1996 panel data of the Survey of Income and Program Participation (SIPP)¹⁰. The 1996 panel, started in April 1996, contains a nationally representative sample of 37,000 households that were interviewed every four months for four years. The data collected includes income, earnings, labor force participation, social program participation including SNAP, AFDC and others (energy assistance, housing assistance, disability insurance, health insurance, etc), and general demographic and household characteristics such as level of education, household composition, well being, food security, presence of disability location, ethnicity, language spoken, etc.

The data will be refined to include working poor households from both states who are only eligible to participate in SNAP. Since eligibility criteria are determined by the

¹⁰ SIPP was preferred than the Panel of Study of Income Dynamics- that is widely used in measuring social programs' impacts, since the later is conducted biannually, and I expect that enrollment in SNAP could have happened soon after EBT introduction. Therefore observations collected on a shorter time spans could be more suitable given the nature of this research.

federal government and are the same for all states, it will be easy to drop observations of households who were not eligible in a given time period (households whose incomes and assets exceed the SNAP eligibility criteria at the time, in addition to the residence in the US requirement). On the other hand, data on SNAP policies in both states such as the presence of call centers, broad based eligibility, certification lengths, etc. will be obtained from SNAP Policy Database (Economic Research Service).

Importantly, the SIPP uses a national representative sample and is not designed to generate estimates on the sub national (state) level. However, the US census provided experimental weights that can be used for studies using state level data from the SIPP.

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