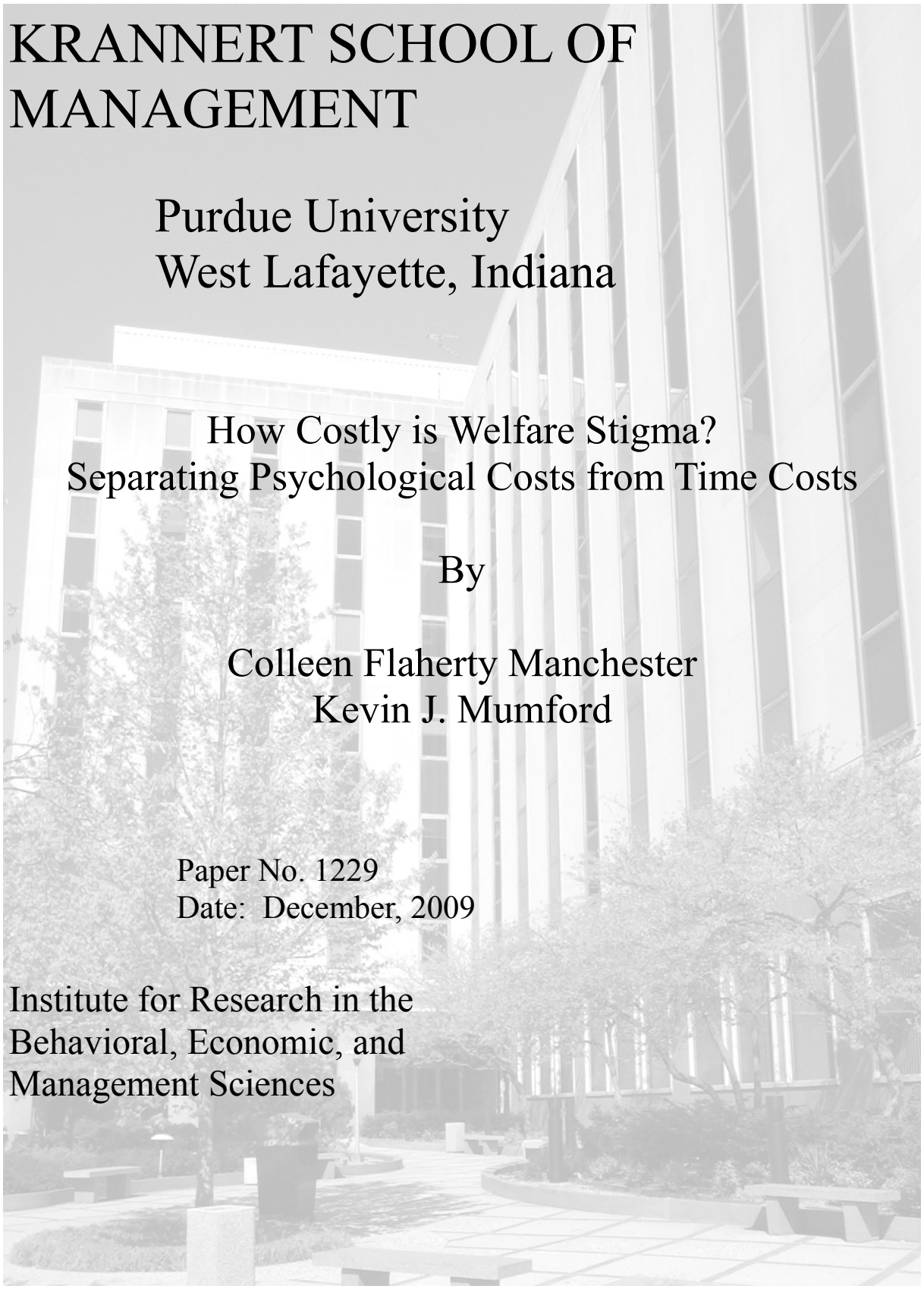

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Purdue University
West Lafayette, Indiana

How Costly is Welfare Stigma? Separating Psychological Costs from Time Costs

By

Colleen Flaherty Manchester
Kevin J. Mumford

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How Costly is Welfare Stigma? Separating Psychological Costs from Time Costs

Colleen Flaherty Manchester[†]
University of Minnesota

Kevin J. Mumford[‡]
Purdue University

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Abstract

This paper empirically decomposes the costs of welfare participation using a model of labor supply and participation in multiple welfare programs. Prior estimates of the cost of welfare participation have not differentiated psychological costs, or stigma, from the effort required to become eligible and maintain eligibility (time costs). The relative size of these two costs has implications for policy. We find that psychological costs are at least as large as the time costs associated with participation in food assistance programs. In addition, we find that the incidence of psychological costs is inconsistent with these costs acting as an effective screening mechanism.

Keywords: Program Participation, Welfare Stigma, Labor Supply, Structural Estimation

[†]Carlson School of Management, 321 - 19th Avenue South, Minneapolis, MN 55455. cmanch@umn.edu
[‡]Department of Economics, 100 South Grant Street, West Lafayette, IN 47907. mumford@purdue.edu

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1 Introduction

A substantial fraction of households that are eligible for welfare, or public assistance, do not participate. Across program, most estimates of welfare take-up rates for the U.S. range from 40 to 80 percent (Hernanz, Malherbet, and Pellizzari 2004). By refusing to collect welfare benefits, households are foregoing consumption and thus appear to violate a primary tenet of microeconomic theory, that higher consumption yields higher utility. The decision to turn down welfare benefits, however, is economically justifiable if there is a cost associated with participation.

While other social science disciplines developed the idea of participation imposing a psychological cost, Moffitt (1983) is the first to explicitly introduce "welfare stigma" – the disutility incurred from participating in welfare – into an economic model. He found evidence for a sizable utility cost from participation and his work initiated a stream of literature concerned with measuring the effect of stigma on participation. One approach has been to estimate the effect of observable characteristics, which researchers argue are associated with welfare stigma, on the probability of participation using a latent index model (Blundell, Fry, and Walker 1988; Riphahn 2001), while others have used experimental approaches (Daponte, Sanders, and Taylor 1999) or dynamic approaches (Blank and Ruggles 1996). Using a structural model of labor supply and welfare participation, Moffitt (1983) and Keane and Moffitt (1998) have modeled the costs associated with participation as an all-encompassing welfare stigma term and have been successful at quantifying the total utility cost due to participation. Fang and Silverman (2004) used a dynamic structural model to show that non-participation could be explained by a one-time welfare stigma cost at first use rather than a reoccurring cost during each period of participation.

In this paper we extend this prior work by decomposing the utility cost of welfare participation into the psychological cost of participating and the time and effort required to maintain eligibility (time costs). Estimating the combined utility cost of participation, as in

Moffitt (1983), informs policy-makers about the net value of welfare benefits. However, being able to distinguish what fraction of this utility cost is attributable to the opportunity costs associated with complying with participation requirements relative to psychological costs conveys important additional information that could have policy implications. For example, if the utility costs of participation are primarily due to time costs, such as paperwork and visits to welfare program offices, policies with the goal of increasing take-up rates among eligibles could focus on streamlining the application and re-certification process. Prior research has found these processes to be costly and burdensome, as evidenced by higher exit rates in the last month of the eligibility period (Grobe, Weber, and Davis 2008) and by surveys of individuals who have exited welfare (Brauner and Zedlewski 1999).

If the utility costs of participation are primarily due to psychological costs, however, then take-up rates could be increased by reducing the visibility of welfare participation, such as by using refundable credits in the federal income tax code like the Earned Income Tax Credit (EITC).[1] Studies in the sociology and public health literatures show that participants in welfare programs report lower self-image as well as negative treatment by neighbors, peers, and program administrators. These psychological costs may be lowered by making participation less visible because research has found that negative stereotypes are often transmitted through "stigma symbols," such as food stamp coupons and Medicaid cards (Rosier and Corasaro 1993; Barr 2000; and Stuber and Schlesinger 2006). Alternatively, a policy initiative that promoted these programs as entitlements rather than welfare would decrease psychological costs while preserving the in-kind nature of transfer programs.[2] In addition, as an ordeal mechanism to make welfare participation less attractive to able-bodied individuals, time costs and psychological costs are not likely to be equally useful. Separating

[1]This assumes that psychological costs are significantly lower for income received through the tax system than through welfare programs. This is sensible due to the low visibility and the widespread usage of tax credits and deductions. Hotz and Scholz (2003) estimate that EITC participation among eligibles in 1996 was as high as 87.2 percent, which is substantially higher than take-up rates in most welfare programs.

[2]See Currie and Gahvari (2008) for a review of the theoretical arguments for in-kind transfers and the varying empirical support for the proposed theories.

time costs from psychological costs in the estimation allows for more informed public policy discussion.

We develop a static model of program participation and labor supply that allows for the separate estimation of psychological and time costs associated with welfare participation. We model participation in two welfare programs: the Food Stamp Program (FSP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). For identification, we assume that the psychological cost associated with participation does not increase with the number of programs in which the individual participates. Time costs, however, are specific to the program and thus accrue according to the set of programs in which the individual participates because WIC and FSP benefits are distributed at different offices and redemption requires two separate transactions. Our static model, similar to Keane and Moffitt (1998), does not allow for the differentiation of long-term eligible and short-term eligible households as in the dynamic model of Fang and Silverman (2004). While this advantage of a dynamic model is appealing, it increases the complexity and potentially distracts from the identification of psychological and time costs.

The identification assumption implies that there are no additional psychological costs from participating in WIC if one is already a FSP participant and vice versa. Our specific application to FSP and WIC makes our identifying assumption tenable because both programs provide similar in-kind benefits redeemed at a grocery store. This assumption would not necessarily hold for other welfare programs. While it is not possible to test this assumption directly, we show evidence consistent with this assumption by showing that FSP participation is affected by discontinuities in WIC benefits.

Using a simulated estimation method, we find that, psychological costs are important. We calculate the amount of consumption (in dollars) that would be needed to offset the utility loss caused by psychological cost of participating in welfare. On average the psychological cost of participating in a food assistance program is about $19 per week. We estimate that the time cost of participation in the FSP is about 0.5 hours per week ($4 in consumption

equivalent) and that the time cost is about 3.1 hours per week ($21 in consumption equivalent) for WIC. For a FSP participant, the psychological costs are much larger than the time costs. For a WIC participant the psychological and time costs are similar in magnitude. Of course, there is considerable heterogeneity in the psychological costs; the standard deviation is nearly $30 in consumption equivalent per week.

In Moffitt's (1983) seminal work, he recognizes that his utility cost estimate includes other factors besides psychological and time costs, such as lack of information about a program, which can be interpreted as the costs of acquiring information about welfare. We do not explicitly model knowledge of welfare programs or the cost of acquiring this information. We argue that knowledge of these welfare program is very high among the individuals in our data (single women). However, because information is not modeled explicitly, the structural assumptions of our model have implications for where information costs are absorbed in the estimation. If one assumes that individuals lack information about the existence of food assistance programs, then our estimate of the psychological costs includes the costs of acquiring this information. If however, the role of information is program specific and surrounds the details of benefits and eligibility, then this information cost is part of the time costs associated with each program. Information costs are likely absorbed into the time costs (biasing them upward) because it is unlikely that many of the individuals in the data are unaware of the existence of these food assistance programs given their thirty-year history.

While the primary goal of this paper is to quantify the relative size of time costs and psychological costs for individuals, social welfare is not necessarily reduced one-for-one with these costs. In particular, these costs may discourage able individuals from substituting government assistance for work. If these costs play a screening role and the ensuing separating equilibrium is socially desirable, then the individual-level utility reductions overstate the impact of these costs on social welfare. This paper outlines a simple screening model to illustrate this idea and we use our empirical results to test this model. We find a strong negative correlation between the psychological cost of welfare program participation and the

preference for leisure, which suggests that the incidence of psychological costs is inconsistent with these costs acting as an effective screening mechanism.

The economic model of welfare program participation and labor supply is outlined in Section 2. Section 3 describes the benefits and eligibility rules of the two welfare programs used in this study, FSP and WIC, as well as the data used for the analysis. Section 4 gives the econometric and functional form specification and the method of estimation is discussed in Section 5. Section 6 provides the results from the simulated estimation and quantifies the magnitude of the utility costs. We extend the primary empirical analysis in Section 7 with a model in which welfare stigma acts as a screening mechanism. Section 8 concludes the paper and outlines areas for future research.

2 Model

We present a static model of labor supply and welfare program participation in a utility maximizing framework. The individual jointly decides how many hours to work in the labor market and whether or not to participate in welfare (one program or multiple programs). Individual i's utility is given by

$$U_i = U\left(L_i\,,\, C_i\right) - \Phi_i \tag{1}$$

where L_i is leisure, C_i is consumption, and Φ_i is the psychological disutility from welfare program participation. The psychological cost, Φ_i, is a flat cost that does not depend on the amount of benefits received. This was one of the main findings from Moffitt (1983) and is consistent with the finding that households value food benefits similarly to cash (Smeeding, 1982).[3] In addition, we allow the psychological cost to be person-specific, which is consistent

[3]Moffitt (1983) tested whether the utility cost of welfare participation (i.e., "welfare stigma") entered the utility function as a flat cost, a variable cost, or both. A flat cost implies a threshold, given by the level of stigma, which benefits must exceed if the individual is to participate. A variable cost means that the value of income received from welfare programs is less than that from private sources of income. Empirically, a flat

with findings in the sociology literature that stigma depends on the individual's life history and their social network (Rogers-Dillon 1995).

Because there is no household production in the model, leisure is the time remaining after completing market work and fulfilling the program-specific welfare participation requirements:

$$L_i = T - H_i - \sum_{k=1}^{K} P_{ki}\,\delta_k. \tag{2}$$

Individual i has a time endowment of T and works H_i hours a week for pay. Participation in welfare program k is indicated by $P_{ki} = 1$, while non-participation is indicated by $P_{ki} = 0$. The time required to fulfill participation requirements for welfare program k is given by δ_k, which captures time-intensive activities such as filling out forms, waiting in line, and traveling to and from the welfare office. This cost also captures any marginal cost associated with participation including monetary costs such as transportation costs.

Consumption is the sum of after-tax income (labor and non-labor) and welfare benefits:

$$C_i = w_i H_i + N_i - \tau_i\left(w_i H_i + N_i\right) + \sum_{k=1}^{K} P_{ki}\,B_{ki}. \tag{3}$$

The wage is given by w_i and non-labor income is given by N_i. The tax function, τ_i, depends on i's family characteristics, for example, the number of dependents. It maps income (labor and non-labor) into tax liability. The value of welfare benefits from participating in program k is B_{ki} where the value of welfare benefits may depend on family characteristics. The incentives created by welfare programs may influence family structure itself; however, studies find that the estimated impact is small in magnitude (Moffitt 1992). We assume that marital status, number of children, and living arrangement are exogenous and do not depend on benefit levels.

cost implies that take-up rates would increase if welfare benefits were to become more generous; a variable cost alone would not have this implication. Using data on participation in Aid to Families with Dependent Children (AFDC) by single females from the Panel Study on Income Dynamics (PSID), Moffitt (1983) only finds evidence of a flat utility cost.

The psychological utility cost from welfare program participation is given by the following:

$$\Phi_i = \begin{cases} \phi_i & \text{if } \sum_{k=1}^{K} P_{ki} > 0 \\ 0 & \text{if } \sum_{k=1}^{K} P_{ki} = 0 \end{cases} \tag{4}$$

where $P_{ki} \in \{0, 1\}$. The individual bears psychological cost ϕ_i if she participates in any welfare program (i.e. lowered self-image as a result of relying on the government for support). This psychological cost is due to being a welfare recipient and is the same regardless of the number of welfare programs in which she participates. This assumption is the primary source of identification.

The level of welfare benefits, B_{ki}, that an individual would receive if she were to participate in program k is given by the function b_k which maps household characteristics (Z_i) and income into welfare benefits:

$$B_{ki} = b_k \left(w_i H_i, N_i, Z_i \right). \tag{5}$$

Participation in a welfare program k is subject to eligibility constraints on income, assets, and household characteristics. Because welfare participation is a binary decision, the individual faces 2^K possible participation combinations, where K is the total number of welfare programs. The individual selects welfare participation and hours to maximize (1) subject to (2) through (5).

This structural model allows for a more accurate characterization of welfare program eligibility than is commonly used. In the model, welfare program participation decisions are made jointly with labor supply decisions. Therefore, most households are potentially eligible to participate in welfare programs; however, actual eligibility depends on the labor supply decision.Eligibility for WIC depends primarily on the presence of children in the household. Children are taken as exogenous, so households without children are not eligible regardless of the chosen labor supply. For example, a household with observed earnings

greater than the eligibility cutoff could have received benefits by choosing to earn less. This model seeks to explain not only why eligible households choose not to participate, but also why other households choose to earn more than the eligibility cutoff and thus preclude welfare participation. The eligibility requirements are explained in Section 3.1.

3 Welfare Program Characteristics and Data

We restrict our analysis to two U.S. welfare programs, the Food Stamp Program (FSP) and Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).[4] These food and nutrition welfare programs are federally financed and approximately uniform across states; both have been in existence since the early 1970s. In addition, we use these two programs because the non-additivity assumption on psychological costs is most defensible because benefits from both programs are redeemed at a grocery store. The assumption for additive time costs is also valid because programs are operated out of different offices and benefits must be redeemed separately.[5] In contrast to AFDC and TANF, most rules for FSP and WIC are set at the federal level, which limits the role of measurement error in imputing program rules, and also avoids the potential problem of state specific time limits that were imposed on TANF as a part of Welfare Reform in 1996 .[6] Trippe and Doyle (1992) find that approximately 50 percent of households eligible for food stamps do not participate in the program, while Kim (1998) estimate that only 32 percent of eligible families participate in food stamps among the working poor.[7] Throughout this paper, WIC is indicated by $k = 1$ and FSP is indicated by $k = 2$.

[4]As of October 1, 2008 the federal Food Stamp Program received a new name: Supplemental Nutrition Assistance Program (SNAP), to reflect recent changes in the program that promote nutrition and healthy eating among low income individuals.

[5]At the grocery counter, WIC items must be separated from items purchased using Food Stamps.

[6]Temporary Aid for Needy Families (TANF) replaced AFCD with the passage of Welfare Reform Act in 1996, also known as 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA).

[7]Trippe and Doyle (1992) use the Current Population Survey (CPS) from 1976 to 1990. While the mean is about 50 percent, there was some variation in take-up rates over the period.

3.1 Benefit Calculation and Eligibility Requirements

The eligibility requirements and benefit formula used in this paper closely approximate the national eligibility standards for both programs. WIC was established in 1972 as a program to provide nutritional support to women who are pregnant or breast-feeding and to children under age five. WIC provides paper coupons that specify exactly what and how much food can be purchased.[8] These food items include infant formula, juice, milk, cereal, and protein-rich foods (such as peanut butter and beans). In addition to the restriction on household demographics, a family is eligible for WIC benefits if its income is less than 185 percent of the federal poverty level. The program also stipulates that individuals need to be at risk in terms of nutritional status. In practice, however, women and children who meet the income requirement are deemed eligible for WIC benefits because nutritional risk is broadly defined in that low-income children are classified as being nutritionally at risk (Currie 2003).

For eligible families, WIC benefits do not decrease with income. Benefits depend on the age and number of children, as well as on whether or not the woman is pregnant.

$$B_{1i} = \begin{cases} 0 & \text{if } i \text{ has no children} < \text{age 5 and is not pregnant} \\ \bar{B}_{1i} & \text{if } w_i H_i + N_i \leq 1.85(\text{poverty}_i) \text{ and } \{\text{children} < \text{age 5 or is pregnant}\} \end{cases} \tag{6}$$

where $\bar{B}_{1i}$ is the dollar value of the food items qualified for based on family characteristics. Benefits are equal to zero if there are no children under age five and the woman is not pregnant or if income exceeds 185 percent of the poverty threshold for that family size. Unlike FSP, WIC benefits are specified in quantities of food, not as a dollar value. For this analysis, we convert the food items into dollar amounts using inflation-adjusted prices of these goods. The food items covered by WIC depend on family characteristics, hence the value of benefits depends on the family's composition. Table 1 shows the value to the

[8]Currently, some states are adopting EBT systems for WIC. As of March 2008, only New Mexico and Wyoming had adopted statewide EBT system for WIC; eleven states are currently piloting the program (source: http://www.fns.usda.gov/wic/EBT/wicebtstatus.htm).

family by age of child in 1997 dollars. Prices were computed using 2006 prices per ounce of food product and deflated using the CPI-U. Prices per ounce were selected from large-size packages to use the lowest available price to err on the side of undervaluing the benefits to avoid overestimating the role of psychological and time costs in the participation decision.

Eligibility for FSP requires satisfying two income tests: 1) *gross income test*, or that income cannot exceed 130 percent of the poverty threshold for that family size; and 2) *net income test*, or that gross income less 20 percent of earned income and child care costs (set to be $125 per child under age 5), cannot exceed the poverty threshold.[9] We approximate the third eligibility requirement for FSP, the *asset test*, by assuming that those individuals with liquid assets in excess of $5000 are not eligible.[10] We select an asset cutoff above the actual FSP level of $2000 (or $3000 for families with an elderly individual) because in practice, recipients often "spend down" their assets or hide them in order to meet the asset threshold.

In this paper, FSP benefits, B_{2i}, are given by:

$$B_{2i} = \bar{B}_{2i} - 0.3\,(0.8\,w_i\,H_i + N_i - 125 \text{ children}_i) \tag{7}$$

where children_i is the number of children under age five in the household. The maximum benefit level, $\bar{B}_{2i}$, depends on the number of persons in the family. FSP benefits are reduced at a rate of 30 percent for each additional dollar of net income (including transfers from AFDC or TANF).[11]

Historically, FSP distributed coupons that could be used to purchase any food item at participating stores, excluding alcohol, tobacco, and some prepared foods. In 1993, Maryland instituted an electronic benefit transfer (EBT) system to modernize the process. A mandate

[9] Actual eligibility includes a deduction for excess housing costs and opportunities for larger child care deductions; however, since we do not observe these expenditures we err in the direction of under-predicting benefits to avoid over-predicting psychological and time costs.

[10] Assets are defined as liquid if they are held in checking or interest-earning accounts. Assets held in stocks or bonds are not subject to this asset limit because, if these assets are held in pension accounts, they would not be counted against the asset limits by the Food Stamp Program office.

[11] While not explicit in equation 7, earned income includes all labor income in the household.

was passed in 1996 which required all states to adopt EBT by 2002. The adoption of EBT was slow; by 2000, only twenty states had initiated pilot programs. This paper analyzes participation in the fall of 1997, which is well before the full adoption of EBT. Future work could compare estimates of psychological costs and time costs before and after the adoption of the electronic system, but this is beyond the scope of this paper.

3.2 Data

The data used for the study is a sample of female household heads from the Survey of Income and Program Participation, 1996 (SIPP96).[12] Our sample consists of non-married women of working age who are in households where they are the sole decision-maker. Households with multiple agents of working age were eliminated to alleviate concerns about joint labor supply decisions within a household, leaving us with 5,541 heads of household, representing approximately 17 million women.[13]

The selected sample represents a large fraction of welfare participants. In 1997, 60 percent of households that participated in food stamps and 40 percent of households that participated in WIC had an unmarried female household head. In the same year, 44 percent of households that participated in FSP and 28 percent of households that participated in WIC also satisfied the single-decision maker restriction. While the selected sample does not represent the full welfare-eligible population, it does represent a substantial part of that population.

[12]Recent research on survey measures of participation has found that the SIPP is less prone to underreporting bias relative to other large-scale surveys, such as the Current Population Survey (Meyer and Sullivan 2008).

[13]Within our sample, determining who is the head of household is usually straightforward because we have eliminated households with multiple working adults, the exception being if these adults are children still living at home. For more ambiguous family arrangements, the assignment of household head status is based on earned income, age, whether the women is a mother, and who owns the welfare benefits (when applicable). We only include households consisting of individuals or families; we did not allow for unrelated secondary individuals or subfamilies (as classified in SIPP). Because we limit our sample to households with a single decision-maker and do not include households with unrelated individuals, our households closely correspond to a food stamp unit.

We analyze data from the fall of 1997, which was before the transition to state-determined welfare was complete to limit confusion regarding time limits by the eligible population due to the Welfare Reform Act of 1996.[14] The family composition was defined as of September 1997, with pregnancy imputed using later waves of the SIPP96. Participation in FSP and WIC was taken from two months, September and October, to allow for a longer time window to observe participation. This means that a family is considered a participant if any member participated in FSP or WIC during either of these two months.

The descriptive statistics for the sample are given in Table 2 and were computed using sample weights. After restricting the sample to women household heads of working age (18 to 64), the average age of these women is about 41 years old. Roughly one-third of these women are of minority status. Over 35 percent have a post-secondary degree and 28 percent have only a high school diploma; the average years of schooling is 13.5. Most of these women live in an urban area and roughly one-third live in Southern states. Nearly 40 percent have children under the age of 18 living with them and approximately 14 percent have a child young enough to meet the eligibility requirement of WIC (under age 5).

The lower panel of Table 2 shows the descriptive statistics for income, assets, and hours worked. Non-labor income includes the earned income from other members in the family as well as interest income, property income, and government transfers. The distribution of the value of liquid assets, which is used in the FSP eligibility test for assets, is highly skewed: the mean value is $3760, while the median is $232. In addition, less than 13 percent of households fail the asset test. Three-fourths of these women had positive weekly hours at some point over the four month window (July 1997 to October 1997) and the average weekly hours was just over 30. For those with zero hours of market work from July to October, we impute their hourly wage; the procedure is described in Section 4.

Table 3 displays the participation rates and benefit values for FSP and WIC. Not controlling for eligibility, nearly six percent of the sample participates in WIC and 16 percent

[14]We also selected this wave due to availability of asset information in the topical module.

participates in FSP; four percent of women participate in both programs. Of those women who meet the WIC requirement based on the ages of children in the household (under age 5), 38 percent participate in WIC. For WIC, participation rates by child's age allow for a comparison to the rates reported by Currie (2003). Table 3 reports that participation rates in WIC are highest for households with an infant (67 percent) and drop substantially for those with children between ages one and five (36 percent); these numbers correspond closely to Currie's finding of 73 percent and 38 percent, respectively.

Returning to Table 3, the bottom panel reports summary statistics for the maximum welfare benefits. Maximum monthly benefits for FSP were computed using family size and state of residence and are equal to the value of benefits at zero dollars of net income. The value of WIC benefits was computed based on the price of the bundle of goods covered for each family member (see Table 1). This maximum benefit value, and not the observed level of benefits, is relevant to the model because it gives the information necessary to determine what the benefit level would be for any potential labor supply decision. To control for how "acceptable" participation in welfare is in an individual's environment, we collect information on AFDC take-up rates by the women's state of residence. The rate is the ratio of total AFDC caseloads divided by number of persons in poverty in 1996 by state; the mean rate is 34 percent. If this rate is capturing the social acceptance of welfare participation at a local level, we expect psychological costs will be decreasing in this measure of the AFDC take-up rate.

4 Econometric and Functional Form Specification

Several reduced-form analysis of welfare participation provide insight into which factors might be associated with the psychological cost of participating in welfare. Blundell, Fry and Walker (1988) find that education and the age of children in the household affect the probability of participation in the U.K. Standard Housing Benefit. Ripahn (2001) finds that

participation rates in the German social insurance program are higher for single-parents, for parents with children under the age of seven, and for those living in cities with higher poverty levels. She interprets these findings as indicating that stigma is lower for families with these characteristics. Like Blundell, Fry, and Walker (1988), she finds that the probability of participation decreases in education attainment. Our analysis incorporates some of these characteristics in the estimation of psychological costs.

The psychological cost incurred by an individual from participating in either or both welfare programs, ϕ_i, is given by

$$\phi_i = X_i \beta + \xi \; AFDCrate_i + \epsilon_i \tag{8}$$

where X_i is a vector of observed characteristics for individual i and ϵ_i is an error term that accounts for heterogeneity in psychological costs across individuals. The $AFDCrate_i$ variable is the state-level AFDC participation rate and its inclusion is a rough measure of local attitudes toward welfare use. We would prefer to have a finer geographical measure of the attitude toward welfare use, but this was unavailable. The vector X_i includes measures of education, children, age, race, region, urban/rural, as well as an indicator for participation in AFDC by the individual. This indicator for AFDC participation is important because the AFDC program participation decision is not modeled explicitly. AFDC participants have already incured the psychological cost, so including this term in equation 8 allows for an appropriate reduction in ϕ_i.

The other source of heterogeneity in the model is over preference for leisure, or distaste for work. The leisure parameter in the utility function is stochastic and given by:

$$\Gamma_i = X_i \gamma + \eta_i. \tag{9}$$

where X_i is the the same vector as in equation 8 and η_i is an error term that accounts for

heterogeneity in preference for leisure, such that higher values of η_i correspond to higher preference for leisure. The two error terms each have zero mean and are jointly normally distributed with a correlation of $\rho_{\epsilon\eta}$.

We use a CES utility function with the psychological cost term entering additively:

$$U = \left[\Gamma_i \left(L_i\right)^{\alpha} + \left(1 - \Gamma_i\right) \left(C_i\right)^{\alpha}\right]^{\frac{1}{\alpha}} - \Phi_i. \tag{10}$$

The parameter α dictates the degree of substitutability between leisure and consumption. The parameter Γ_i indicates the preference for leisure with a larger value of Γ_i implying a stronger preference for leisure.

Estimating the model requires a wage, w_i, for each household. However, about one quarter of women in this data are not employed and thus do not have an observable wage. We predict a wage for these women using a Heckman selection procedure similar to Keane and Moffitt (1998). Table 4 shows the estimates from the log wage equation and selection equation assuming a joint normal distribution. Earnings and hours data were averaged over four months, July through October, in order to smooth over shocks and give a more accurate measure of labor supply.

The estimates correspond to those typically found in the literature: wage is concave in age, increasing in education, higher for women who live in urban areas, and lower for women who identify themselves as black, Hispanic, or Native American relative to white (excluded group) and for those living in southern states. The mean predicted wage for those with positive hours is \$11.79 per hour. The mean predicted wage of those who are not employed is \$9.48, over two dollars less than those with positive hours of market work. The wage w_i is modeled to includes an error term to account for measurement or prediction error in the wage:

$$w_i = \text{predicted wage}_i + \nu_i. \tag{11}$$

The error term, ν, is assumed to be jointly normally distributed with ϵ and η with the correlations given by $\rho_{\nu\epsilon}$ and $\rho_{\nu\eta}$.

We estimate the utility function parameters, time cost parameters, the parameters of the psychological cost equation, and the parameters of the preference for leisure equation, as well as σ_ϵ, σ_η, σ_ν, $\rho_{\epsilon\eta}$, $\rho_{\nu\epsilon}$, and $\rho_{\nu\eta}$. This vector of parameters is indicated by θ. The primary focus of the analysis is to compare the estimates of the time cost parameters, δ_1 and δ_2 to the implied psychological cost derived from the parameter estimates in equation 8.

5 Estimation

The individual's budget set is non-convex and intractable due to the tax function, FSP benefit function, and WIC eligibility cutoff, making it difficult to derive a closed-form labor supply function or to use stepwise-linear techniques. Instead, we compartmentalize hours of work into 4 discrete bins. The bin is denoted by h_i.[15] The log-likelihood for individual i is given by:

$$\ln \ell_i = \sum_{j=1}^{4} \Big[\ln\big(\Pr\left[h_i = j, P_{1i} = 1, P_{2i} = 1 | X_i, \theta\right]\big)(P_{1i})(P_{2i}) + \ln\big(\Pr\left[h_i = j, P_{1i} = 1, P_{2i} = 0 | X_i, \theta\right]\big)(P_{1i})(1 - P_{2i}) \\ + \ln\big(\Pr\left[h_i = j, P_{1i} = 0, P_{2i} = 1 | X_i, \theta\right]\big)(1 - P_{1i})(P_{2i}) + \ln\big(\Pr\left[h_i = j, P_{1i} = 0, P_{2i} = 0 | X_i, \theta\right]\big)(1 - P_{1i})(1 - P_{2i}) \Big]$$

where $j \in \{1, 2, 3, 4\}$ represents the hours of work choices $\{0, 25, 40, 55\}$.

The probabilities in the log-likelihood equation above are computed using simulated methods. A large number of draws (D total draws) are taken from the joint distribution of the error terms in the psychological cost, leisure preference, and wage equations. The

[15] Observed hours are assigned to each bin by creating a range between bins 2, 3, and 4 that spans half the distance to the next bin. This procedure is common in estimating structural models, for example, Keane and Moffitt (1998) consider 3 hours choices: 0, 20, 40.

simulated probability $\Pr_S[h_i, P_{1i}, P_{2i}]$ is given by:

$$\Pr_S[h_i, P_{1i}, P_{2i}] = \frac{1}{D}\sum_{d=1}^{D} \mathbb{1}(h_{id} = h_i, P_{1id} = P_{1i}, P_{2id} = P_{2i}) \tag{12}$$

where d indicates a simulation draw for η, ϵ, and ν. The log-likelihood is evaluated given a vector of parameter values, θ, and then an optimization routine is used to update θ in order to improve the log-likelihood value. We use a simplex method rather than standard quasi-Newton or conjugate gradient methods because the non-convexity of the budget set makes these more standard methods less reliable. Once the solver converges, a new starting value for θ is chosen and the estimation is performed again. This is done many times in an effort to eliminate local maximum values in the log-likelihood function. Although this does not guarantee that a global maximum will be found, the robustness of the parameter estimates to different initial parameter values and the fact that the estimates are economically sensible suggest that the estimation procedure is reliable. The results presented in Section 6 were computed using 3000 simulation draws.

The simulated log-likelihood parameter estimates are asymptotically unbiased as the number of simulation draws grows large. The standard errors are computed as the inverse of the outer-product of the simulated scores. This procedure requires calculating the matrix of contribution to the gradient, $G(\theta)$, but does not require computation of the full Hessian. Calculating the Hessian is computationally difficult because the derivatives of the likelihood function must be found numerically.[16] The matrix of contribution to the gradient is an N x J matrix where N is the number of observations and J is the dimension of the vector of

[16]The Hessian matrix is often computed as part of the estimation procedure. However, this is not the case when the optimization relies primarily on a simplex method. Because the simplex method does not rely on derivatives of the log-likelihood function, these derivatives must be computed numerically once the estimation procedure is completed.

parameters, θ. The elements of $G(\theta)$ are given by:

$$G_{ij}(\theta) = \frac{\partial \ln \ell_i(\theta)}{\partial \theta_j} \tag{13}$$

and are calculated using the finite difference method.

The variance-covariance matrix is computed as the inverse of the outer-product of $G(\hat{\theta})$:

$$V(\hat{\theta}) = \left[G'(\hat{\theta})G(\hat{\theta})\right]^{-1}. \tag{14}$$

6 Results

We apply the procedure outlined in Section 5 to compute estimates of the structural parameters from the model developed in Section 2. The estimates for the psychological costs and leisure preference equations are given in Table 5, while the estimates of the time requirements and other utility parameter estimates are shown in Table 6.

6.1 Parameter Estimates

The estimates from Table 5 show that the psychological costs of participating in a food-assistance program are higher on average for those in metro areas and for those in the West (relative to the Midwest). Psychological costs are lower on average for black women. The indicator for AFDC participation is negative and quite large in magnitude. This implies that the additional psychological cost of participating in a food-assistance program is quite low for an individual who is already participating in a cash-assistance program, which is consistent with our identifying assumption. The state-level participation rate in AFDC is estimated to be negative but statistically insignificant. A better measure of the social acceptability of welfare participation could result in this factor having a more significant role in the estimation.

Table 5 also reports the parameter estimates for the leisure preference equation. The leisure preference parameter, Γ, is bounded between 0 and 1 which means estimates that are seemingly small could still be quite important. Again, the AFDC participation estimate is very important; the large magnitude implies that AFDC participants have a much higher preference for leisure. Women of prime working age (25 to 50) have significantly lower preference for leisure than younger and older women. Women with more education also have a lower preference for leisure.

Table 6 shows the estimates for δ_1, the time requirement of WIC, and δ_2, the time requirement associated with FSP. These estimates imply that receiving benefits and maintaining eligibility for FSP requires about 0.54 hours per week. The estimated time cost associated with obtaining benefits through WIC is higher: approximately 3.14 hours per week. Receipt of benefits through WIC involves doctors visits, nutritional education, and more restrictions on redeeming benefits, which explains the greater time requirement.

In order to express the psychological cost parameter estimates in dollar terms we calculate the level of additional consumption that would be needed to exactly offset the change in utility implied by each psychological cost parameter. This is reported in Table 7. This conversion to 1997 dollars is performed at the mean consumption, leisure and leisure preference values. The standard errors are converted from utility terms into dollars using this same method. The average predicted weekly psychological costs associated with participation for this population is approximately \$18.92. Restricting the sample to those who are not participating in AFDC the average predicted psychological cost is \$27.55. The second column of Table 7 reports the same parameter estimates converted into dollars using the average consumption, leisure, and leisure preference for those who are welfare eligible. In this sub-population, preference for leisure is higher, consumption is lower, and leisure is higher. Again restricted the sample to those who are not participating in AFDC, the average predicted psychological cost is \$24.74 for those who are WIC eligible and \$20.87 for those who are FSP eligible.

When time costs are also converted into dollars, it is clear that the psychological costs of FSP participation are much larger than the time costs. The 0.54 hours per week of FSP time costs is equivalent to $3.90 per week of consumption. For WIC, the time costs are equivalent to $21.58 per week which is similar in magnitude to the psychological costs of participation. For women who are eligible for these programs, the consumption equivalent of WIC time costs is $19.10.

We find that psychological costs are a substantial component of the utility cost of food-assistance program participation and that they have an important influence on an individual's decision to participate or not. This implies that there are important potential effects in terms of increased participation from policies that reduce the psychological costs associated with welfare participation – such as increasing the level of transfer payments in the income tax system – relative to policies that streamline the benefits process. Our findings indicate that policies that increase the negative stereotypes surrounding program usage – both for traditional welfare programs or for other social insurance programs – will result in substantial psychological costs for participants and serve as a barrier to participation.

6.2 Discussion of Identifying Assumptions

The estimated decomposition of the utility cost of welfare participation depends on the assumptions of our structural model. One important assumption is that information costs can be ignored. We assume that the household head is aware of both welfare programs and maximizes utility by choosing hours of work and whether or not to participate in food-assistance programs. We argue that this is a reasonable assumption, primarily based on the finding that much of the movement in participation rates cannot be explained by information costs. In particular, Currie (2003) finds that the participation rates in WIC vary dramatically by child's age: the take-up rate for eligible families with an infant (i.e., a child under age one) is 73 percent, but drops to 38 percent for eligible families with children between ages

one and five. This drop in participation rate as the child ages is not coincidental, but mirrors a dramatic drop in the value of WIC benefits once a child turns one year of age due to the phasing out of infant formula. Low WIC participation rates among families with children over age one is due to the drop in the value of benefits rather than information costs.

Because of the panel nature of the SIPP, it is possible to observe subsequent WIC participation decisions of households that have an infant in 1997. Of those households with an infant that participated in WIC in 1997, only 50 percent continued to participate during 1998 (when the child was age 1), and only 44 percent continued to participate during 1999 (when the child was age 2). Thus, the drop in participation rates by these households cannot be due to a lack of information about the program. Rather, it is likely due to the sharp drop in benefits as the child ages (see Table 1). This finding provides additional empirical support for our assumption that lack of information is not a barrier to participation.

If women in our sample are unaware of government-provided food assistance, than our estimate of psychological costs includes lack of information. However, if individuals know that assistance is available, but do not participate because learning the details of a specific program is too costly, then information costs are absorbed in the time cost estimates. We believe the latter is more justifiable given the long history of these two programs (i.e., both began in the early 1970s) and because we limit our sample to female household heads. Given that our estimated time costs are relatively small, this potential bias does not affect the paper's main conclusions. While Daponte, Sanders, and Taylor (1999) find some evidence that information increases participation rates in FSP among low-income families, they also find evidence that acquisition of information is endogenous: households with higher expected benefits are more likely to acquire information about the program. They find that FSP participation rates rose sharply with the amount of qualified benefits, increasing from 40 percent for the first quartile to 93 percent for the fourth quartile. This is consistent with individuals basing participation decisions on a cost-benefit calculation and with the cost of acquiring information as a program-specific cost and inconsistent with non-participants

lacking of information about the availability of in-kind assistance.

The key assumption that provides identification of the utility cost decomposition is that there are no additional psychological costs from participation in a second food-assistance program. We cannot test this assumption directly, but we can present evidence consistent with this assumption. In particular, the drop in WIC benefits at the qualifying child's first birthday and again at the child's fifth birthday provide exogenous variation in the WIC participation rate. This drop in benefits is associated with a large drop in WIC participation at age 1 and age 5 as previously discussed. Our identifying assumption implies that FSP participation should also drop at these points because the marginal cost of FSP participation is much lower for a WIC program participant, even though child age has no direct affect on FSP benefits. As shown in Figure 1, FSP participation rates are affected by child age. There are discontinuities in FSP participation at the points where WIC benefits are discontinuously reduced.

The results from Keane and Moffitt (1998) provide additional support for our identifying assumption. These authors use a structural model of AFDC and FSP welfare program participation to determine whether the utility cost of participation is additive in the number of programs. They find that the estimated utility cost of participating in an additional welfare program is small, or that utility costs are nearly non-additive. Their estimates support our assumption that the psychological cost of welfare participation increases only in the extensive margin, not the intensive margin (Keane and Moffitt (1998) do not consider the WIC program which we estimate has relatively large time costs). In addition to Keane and Moffitt, other studies have found that participating in one program increases the probability of participating in a second program and that individuals who participate in multiple programs tend to leave all of them simultaneously, even when they are still eligible for benefits (Grobe, Weber, and Davis 2008; Brauner 1999).

If the identifying assumption does not hold, any program specific psychological costs would bias the program specific time costs upward. The estimated time cost for the FSP

is small suggesting that any marginal psychological costs for this program would be small implying that our assumption holds at least approximately. The larger time costs for WIC could indicate that there are important additional psychological costs imposed with WIC participation, which is unlikely given the higher income threshold and target population of primarily children. It may simply reflect the higher time cost required by the WIC program. If one finds the identifying assumption untenable, another way to interpret the results is that we are separately estimating the fixed and marginal costs of welfare participation, where the margin is in terms of additional programs. Given the two programs considered, we are interpreting the fixed component as psychological costs and the marginal as time costs.

Comparing the participation decision predicted by the estimation to actual participation behavior is one way to evaluate the accuracy of our model and empirical specification. Table 8 shows actual versus predicted participation behavior for FSP and WIC. The predicted participation choice for each individual is calculated as the participation combination that yields the highest utility given a value of zero for all error terms. If the observable characteristics in the empirical specification perfectly predicted participation, there would be no weight in the off-diagonal elements of the tables. For FSP, the observable characteristics are able to correctly predict participation for about 87 percent of individuals; these characteristics correctly predict WIC participation for about 95 percent of individuals. The substantial fraction of incorrect predictions is not surprising given the importance of unobserved heterogeneity in determining welfare participation.

7 Stigma as a Screening Mechanism

While the primary goal has been to empirically separate time costs from the psychological costs associated with welfare participation, these individual-level costs do not necessarily imply a commensurate reduction in social welfare. The utility costs of welfare participation may be a useful way of distinguishing potential welfare recipients who are of high-ability

from those of low-ability if both have low income. Nichols and Zechhauser (1982) note that "ordeals" required for participation, such as "demeaning qualification tests and tedious administrative procedures," may serve a sorting role (p. 376). Namely, because welfare benefits are available to all individuals with low income, some high-ability individuals may choose to earn less in order to qualify. If the government only wants to provide income transfers to those individuals with low ability, without a selection mechanism it will be unable to distinguish high- and low-ability individuals who both report low income. Hence, in the context of asymmetric information (i.e. the government only observes income, not ability), welfare stigma may act as a screening, or self-targeting, mechanism and enable the government to achieve its policy goals (Currie and Gahvari 2008; Stuber and Schlesinger 2006).

The secondary goal of this paper is to determine whether our empirical results are supportive of psychological costs acting as an effective screening mechanism. Below we outline a simple model to show the conditions under which the utility costs associated with welfare participation could be used as a screening mechanism. In this model agents are either high-ability type (θ_H) who earn wage w_H or low-ability type (θ_L) who earn w_L. If the agent is fully employed, low-ability types earn I_L and high-ability types earn I_H. However, high-ability types can also choose to work less and earn I_L. Hence, conditional on I_L, the agent could be either low- or high-ability.[17] In our model, the government wants to provide welfare benefits to low-ability agents but not to high-ability agents. However, it only observes income, not ability (or wage), and thus cannot determine whether agents who earn I_L are low-ability or high-ability without a screening mechanism.

This model could alternatively be expressed in terms of γ, the utility parameter that indicates the preference for leisure. In this equivalent set-up agents either have a strong

[17]For simplicity, we only allow high-ability types to have two possible levels of income, I_H and I_L. However, because we are thinking of the distribution of type conditional on income, the assumption of the model that only high-ability types have a "choice" over income is not restrictive because one can always construct another income level $I_{L'} < I_L$ that low ability types earn if they are only partially employed.

preference for leisure, γ_H, or have a low preference for leisure, γ_L. High-ability agents who work less and earn I_L do so because they have a higher preference for leisure, while low-ability types who earn I_L have a low preference for leisure.[18] Therefore, conditional on I_L, the agents are either γ_H (corresponding to θ_H) types who thus actually have the potential to earn I_H, or γ_L (corresponding to θ_L) types who earn I_L by being "fully employed." Again, we assume that the government wants to provide welfare benefits to low income agents with γ_L and not to low income agents with γ_H.

In this context, introducing welfare stigma to the model may help the government achieve its policy goal. Welfare stigma imposes a cost, ϕ, on agents who choose to participate in the welfare program. An agent who participates in the welfare program receives benefits which increase utility by B. Therefore, an agent chooses to participate if $B > \phi(\theta)$, where θ represents the agent's type, either θ_H or θ_L. If welfare stigma imposes a higher utility cost on high-ability (or high-leisure types) conditional on income, then it will discourage these agents from participating in the welfare program (i.e. psychological cost has increasing differences in type). In this model, if $\phi(\theta_H) > B > \phi(\theta_L)$ then introducing welfare stigma allows the government to offer welfare benefits to all agents with income I_L and yet only provide welfare benefits to the low-ability agents. All high-ability agents choose to earn I_H and do not receive welfare benefits because the utility cost from welfare stigma is greater than the utility gain from the welfare benefits. Thus, introduction of welfare stigma would have social benefit. However, if ϕ is uncorrelated with type, or has decreasing differences in type, then welfare stigma is not a useful means of achieving the government's goal and simply imposes a cost on the agents.

While the above model is a simplistic characterization of the potential screening role of psychological costs, the implication is that the cost that stigma imposes on society is less than the aggregated individual-level costs if stigma is an effective screening mechanism. The incidence of time costs are consistent with the screening mechanism desired by the

[18] Otherwise, these low-types would have earned an income level less than I_L.

government because time costs are higher for individuals with higher wages. Our model allows us to examine the relationship between psychological costs and preference for leisure.

To evaluate whether stigma is an effective screening mechanism, we calculate the correlation between predicted psychological costs and preference for leisure across individuals. This correlation is -0.7934 implying that those with a lower preference for leisure have higher psychological costs on average. This is strong evidence against stigma serving as an effective screening mechanism and implies that individual-level psychological costs are not offset by a social benefit due to their screening role. There is also considerable unobserved heterogeneity in the psychological cost and preference for leisure equations and the estimated correlation of the error terms is positive ($\rho_{\epsilon\eta}$, is estimated to be 0.05 as reported in Table 6). However, the overwhelming negative correlation of the observables outweighs the positive correlation of the unobservables.

8 Conclusion

This paper differs from the previous studies that seek to estimate the utility costs of welfare participation because it distinguishes psychological costs from time costs. We develop a model of labor supply and participation in multiple welfare programs that we estimate using data on participation in FSP and WIC by female household heads in the SIPP. We estimate the model using a simulated maximum likelihood procedure. To identify psychological costs and time costs, we assume that the psychological cost does not increase in the number of programs in which participants are enrolled and that time costs are program specific.

We find that the time requirement associated with participation in FSP is about 0.5 hours a week or approximately 2 hours a month. The estimated time requirement associated with WIC is much higher: as much as 3.1 hours a week (about 12.5 hours a month). This difference in time requirement is consistent with the more time-intensive activities associated with WIC, including doctor visits, nutritional education, and more restrictions on WIC

benefit redemption.

We find the implied dollar equivalent of the average level of psychological costs associated with participation to be large, about $19 per week. Separately identifying the components of the utility cost associated with participation in welfare is important to welfare reform and policies designed to more effectively reach the target population. In addition, our results suggest that psychological costs are not an effective way to prevent able workers from using government assistance as a substitute for working. Therefore, psychological costs incurred by individuals reflect a direct loss in social welfare.

One limitation of this study is the imputation of eligibility. In the sample of low-income households interviewed by Daponte, Sanders, and Taylor (1999), only 51 percent of households that met the gross income test of 130 percent of poverty also met the asset and net income tests. While we address this concern by imposing both the gross income test and an approximation of the net income as well as a monetary asset test, we are unable to enforce eligibility conditions relating to vehicular assets. In addition, the role of information as a barrier to participation is not captured our model. While we justify this assumption by citing empirical support for the endogeneity of information acquisition due to the strong link between value of benefits and participation status, further work is needed to assess the influence of lack of information relative to time and psychological costs.

The assumption that psychological costs are non-additive may also require further review. Research from sociology and psychology suggests that the psychological costs associated with participation, or stigma, can be decomposed into self-inflicted and peer-inflicted costs, or identity and treatment stigma (Yaniv, 1997; Stuber and Schlesinger, 2006). Treatment stigma is the negative treatment by friends, family, or program administrators, while identity stigma is negative self-characterization by the participant or potential participant. In this framework, treatment stigma could plausibly increase with the number of programs as the participant is exposed to additional peer groups or social audiences (e.g. grocery stores, medical clinics, childcare centers, etc.). Future work could attempt to estimate these different

sources of psychological costs by incorporating additional programs into the model, such as by looking at participation in programs either that differ in where benefits are used or that are used in the same environment, but differ in transparency of usage.

The estimated model could be used to assess the social welfare implications of different transfer policies, such as policies that reduce the visibility of program usage. Such a policy could include tightening welfare program eligibility requirements while expanding the EITC program in a way that preserves existing expenditures levels. Additionally, future work could evaluate the adoption of the EBT system by applying the model in this paper to more recent data from the 2004 SIPP to assess the effect of this policy change on psychological costs. Given the large estimates of the psychological costs of welfare participation obtained in this paper, policies that reduce the visibility of participation will likely increase social welfare substantially.

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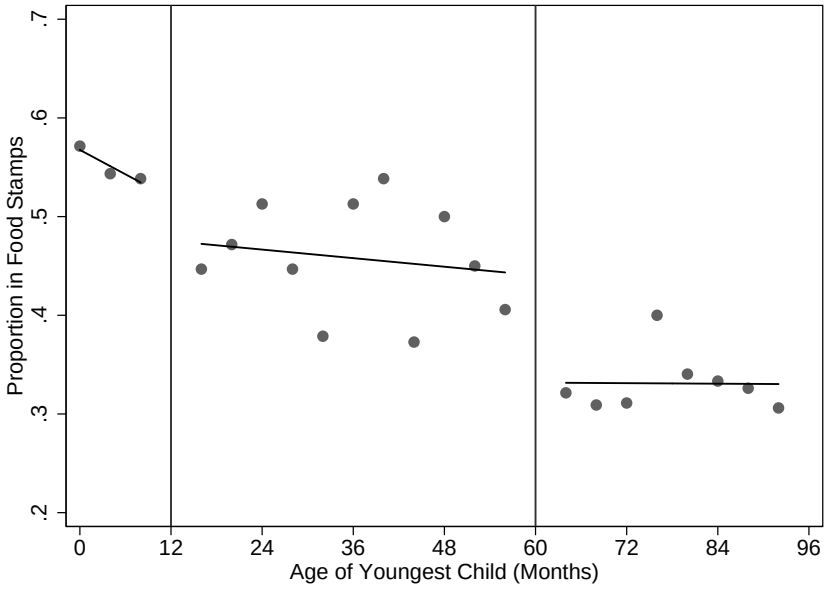
Figure 1: Food Stamp Program Participation Rate by Age of Youngest Child



Source: The data is described in Section 3.2 and is a sample of female household heads from the 1996 SIPP. The two vertical lines represent points where WIC benefits are reduced. The data points shown are the FSP participation rates for each 4-month child age group.

Table 1: Value of WIC Benefits

Family Member	Monthly Value of Food Items ($1997)
Infant: 0 to 3 months	$97.66
Infant: 4 to 12 months	$105.41
Child: 1 to 5 years	$31.26
Mother: Pregnant or Breast-feeding	$33.59

Sources: Food items from www.fns.usda.wic/benefitsandservices/foodpkgtable.htm

Prices: www.giantfood.com and prices deflated using CPI-U: www.bls.ogv/cpi

Table 2: Descriptive Statistics (*Weighted*)

Demographic Characteristics	Mean	St. Error	Minimum	Maximum
Age	40.6	0.2	18	64
White	65.1%	0.7%	0	1
Black	23.0%	0.6%	0	1
Hispanic	7.8%	0.4%	0	1
Asian or Native Amer.	3.9%	0.3%	0	1
Years of Schooling	13.5	0.04	0	20
Master's Degree or higher	7.7%	0.4%	0	1
Bachelor's Degree	15.8%	0.5%	0	1
Associate's Degree	12.1%	0.5%	0	1
Some College	21.6%	0.6%	0	1
High School Graduate	28.0%	0.6%	0	1
High School Dropout	8.6%	0.4%	0	1
Junior High Dropout	6.3%	0.3%	0	1
Live in Urban Area	82.9%	0.5%	0	1
South	34.2%	0.7%	0	1
Family Size	1.9	0.2	1	13
Any Children in Family (*under age 18*)	39.3%	0.7%	0	1
Number of Children (*under age 18*)	0.7	0.02	0	10
Child under age 5 (*WIC eligible*)	13.8%	0.5%	0	1
Teen in Family	16.0%	0.5%	0	1
Elderly Dependent	3.4%	0.2%	0	1

Labor Force Participation and Income	Mean	St. Error	Minimum	Maximum
Non-Labor Income (*weekly*)	$138	$4	$0	$11,258
Positive Non-Labor Income	82.6%	0.6%	0	1
Liquid Assets	$3760	$200	$0	$275,279
Liquid Assets (Median)	$232			
Positive Hours	76.6%	0.6%	0	1
Weekly Hours of Work	32.0	0.3	0	154

Table 3: Welfare Participation and Benefits

Program Participation	Mean	St. Error	Min	Max
WIC	5.7%	0.3%	0	1
FSP	15.7%	0.5%	0	1
WIC and FSP	4.0%	0.3%	0	1
WIC (with a Child under age 5)	38.3%	1.8%	0	1
WIC (with an Infant)	66.5%	4.2%	0	1
WIC (with a Child age 1 to 5)	36.0%	1.9%	0	1

Monthly Benefit	Mean	St. Error	Min	Max
Maximum FSP Benefits	\$208	\$108	\$121	\$1,180
Value of WIC Benefits (Child $<$ 5 years old)	\$53	\$37	\$31	\$242
State Take-up Rate in AFDC (1996)*	34.4%	8.3%	13.0%	63.0%

*Caseload as a fraction of individuals in poverty by state in 1996. Computed using Census and Department of Health and Human Services data.

Table 4: Hourly Wage - Heckman Selection Correction

	Ln Wage		Positive Hours	
Characteristics	Coefficient	St. Error	Coefficient	St. Error
Age	0.050	(0.004)**	0.057	(0.012)**
Age - Squared	-0.001	(0.000)**	-0.001	(0.000)**
Master's or higher	0.560	(0.029)**	0.779	(0.103)**
Bachelor's Degree	0.422	(0.022)**	0.370	(0.069)**
Associate's Degree	0.219	(0.023)**	0.412	(0.073)**
Some College	0.146	(0.019)**	0.192	(0.057)**
High School Dropout	-0.130	(0.031)**	-0.473	(0.068)**
Junior High Dropout	-0.184	(0.043)**	-0.783	(0.078)**
Black	-0.056	(0.017)**	-0.154	(0.050)**
Hispanic	-0.102	(0.027)**	-0.055	(0.076)
Asian	0.046	(0.051)	0.072	(0.170)
Native American	-0.051	(0.045)	-0.111	(0.128)
South	-0.094	(0.014)**	0.013	(0.043)
Urban	0.156	(0.018)**	0.135	(0.053)*
Presence of Children under Age 5			-0.504	(0.061)**
Non-Labor Income (weekly)			-0.001	(0.000)**
Constant	0.951	(0.093)**	0.209	(0.251)
Total Observations	5,541			
Censored Observations	1,335			
Log-likelihood	-4932.2			

** Significant at 1%; * Significant at 5%

Table 5: Psychological Cost and Leisure Preference Estimates

Variable	Psychological Cost	Leisure Preference
years of schooling	0.036	-0.0007**
	(0.028)	(0.0001)
kids under age 5	-0.053	-0.0529**
	(0.154)	(0.0015)
metro	1.547**	-0.0299**
	(0.212)	(0.0011)
AFDC participant	-23.409**	0.1633**
	(1.686)	(0.0028)
age under 25	2.052**	-0.0018
	(0.670)	(0.0037)
age 25-29	-0.109**	-0.0669**
	(0.458)	(0.0020)
age 30-34	0.281*	-0.0409**
	(0.124)	(0.0036)
age 35-39	0.288	-0.0519**
	(0.528)	(0.0044)
age 40-44	0.460	-0.0543**
	(0.700)	(0.0044)
age 45-49	-0.084	-0.0542**
	(1.708)	(0.0059)
age 50-54	-0.075	-0.0157
	(0.147)	(0.0095)
Black	-2.348**	0.0224**
	(0.395)	(0.0021)
Hispanic	-0.992	0.0269**
	(1.160)	(0.0039)
Asian	0.116	0.0155
	(2.535)	(0.0151)
Native American	-0.010	0.0072
	(1.968)	(0.0053)
south region	-0.054	0.0091**
	(0.335)	(0.0013)
west region	1.165**	0.0174**
	(0.125)	(0.0028)
northeast region	0.546	0.0281**
	(0.617)	(0.0019)
AFDC Rate by State	-1.522	-
	(1.467)	-
Constant	-0.099	0.5466**
	(0.115)	(0.0008)

** Significant at 1%; * Significant at 5%

Table 6: Time Requirements and Utility Parameter Estimates

WIC Time Requirement (δ_1)	3.14**
	(0.02)
FSP Time Requirement (δ_2)	0.54**
	(0.11)
η	0.209**
	(0.001)
ϵ	15.885**
	(0.548)
ν	12.174**
	(0.072)
$\rho_{\epsilon\eta}$	0.050**
	(0.004)
$\rho_{\nu\eta}$	0.072**
	(0.005)
$\rho_{\nu\epsilon}$	-0.456**
	(0.001)
α	0.036**
	(0.003)

** Significant at 1%; * Significant at 5%

Table 7: Psychological Cost Coefficient Estimates in Dollars

Variable	Full Sample	Welfare Eligible
years of schooling	0.144	0.158
	(0.152)	(0.166)
kids under age 5	-0.212	-0.233
	(0.612)	(0.671)
metro	6.212**	-6.821**
	(0.850)	(0.933)
AFDC participant	-90.465**	-108.418**
	(6.514)	(7.807)
Black	-9.375**	-10.373**
	(1.577)	(1.745)
Hispanic	-3.980	-4.368
	(4.656)	(5.110)
Asian	0.465	0.510
	(10.144)	(11.125)
Native American	-0.040	-0.044
	(8.039)	(8.814)
south region	-0.216	-0.237
	(1.348)	(1.479)
west region	4.676**	5.132**
	(0.503)	(0.552)
northeast region	2.189	2.402
	(2.477)	(2.717)
AFDC Rate by State	-6.112	-6.711
	(5.893)	(6.471)

** Significant at 1%; * Significant at 5%

Table 8: FSP and WIC Predictions

FSP Participation, Actual and Predicted Percentages

	Predicted Non-Participant	Predicted Participant	Total
Actual Non-Participant	76.30	7.20	83.50
Actual Participant	6.06	10.43	16.50
Total	82.37	17.63	100

WIC Participation, Actual and Predicted Percentages

	Predicted Non-Participant	Predicted Participant	Total
Actual Non-Participant	91.97	2.22	94.19
Actual Participant	2.62	3.19	5.81
Total	94.59	5.41	100