

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

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Abstract

This paper empirically decomposes the costs associated with participation in welfare by developing a structural model of labor supply and multiple program participation to better understand the barriers of participation in social insurance programs. The well-documented fact that many individuals who are eligible for welfare choose not to participate implies that there is a sizable cost associated with participation, but little is known about the composition of this cost. Prior estimates have not differentiated psychological costs of participation, or “stigma,” from the time and effort required to become eligible and maintain eligibility (time costs). However, the relative size of these two costs has implications for welfare reform. Applying our model to data from the Survey of Income and Program Participation, 1996 (SIPP96), we find that psychological costs are substantially larger than the time costs associated with participation and we find that psychological costs increase with educational attainment and are lower for women of a minority race. To determine whether the psychological cost of participation borne at the individual-level reduces social welfare by a commensurate amount, this paper considers a model in which psychological costs may discourage the use of government assistance as a substitute for work in the context of asymmetric information about an individual’s ability. We estimate a negative correlation between the preference for leisure and psychological costs, which suggests that the incidence of psychological costs is inconsistent with these costs acting as an effective screening mechanism.

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1 Introduction

A substantial fraction of households that are eligible for welfare, or public assistance, do not participate. Depending on the program, most estimates of welfare participation 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 co-authors (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.

This paper extends this prior work by decomposing the cost of participation in welfare 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). However, if the utility costs of participation are primarily due to psychological costs, 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 Separating time costs from these psychological costs in the estimation allows for more informed public policy discussion.

This paper develops a structural model that allows for the separate estimation of these two types of costs associated with welfare participation. We model participation in two welfare programs: Food Stamp Programs (FSP) and 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. Using a simulated estimation method, we find that, on average, psychological costs are substantially higher than time costs associated with participation. On a weekly basis, participation in FSP requires approximately 0.81 hours, while WIC requires 1.31 hours. Among participants, this implies a time costs of approximately \$9.25 (time requirements multiplied by wage rate). However, average psychological costs compose the dominant share of

¹This 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 participation rates in most welfare programs.

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

costs: the utility costs due to psychological costs is equivalent to approximately \$215 a week.

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 negative correlation between psychological costs and 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

This paper builds on the work of Moffitt (1983) and Keane and Moffitt (1998) by developing a structural model with an explicit utility cost of welfare participation. The model is designed to take advantage of the lessons learned from these previous studies. 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 cost implies that participation 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.³ Earlier research by Smeeding (1982), which found that households value food stamp benefits similarly to cash, is consistent with Moffitt’s (1983) finding that there is no variable utility cost from welfare participation.⁴ Thus, our model is designed to only allow for a flat utility cost of welfare participation. In addition, our model allows stigma to be person-specific, which is consistent with findings in the sociology literature that stigma depends on the individual’s life history and their social network (Rogers-Dillon 1995).

The structural model developed in this paper allows for a more accurate characterization of eligibility for these welfare programs. 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.⁵ 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.

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

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

where L_i is leisure, C_i is consumption, and Φ_i is the psychological disutility from welfare program participation. Because there is no household production in the model, leisure is the time remaining

³Because his estimate of the variable cost component would imply that welfare income is more valuable than wage or asset income, he concludes that the variable cost component is unimportant and suggests that stigma enters only as a flat utility cost.

⁴Smeeding’s conclusion is based on the observation that the dollar value of benefits does not typically exceed the family’s total food expenditure.

⁵Eligibility for WIC depends primarily on the presence of children in the household. This is a static model, and children are taken as exogenous. The eligibility requirements are explained in Section 3.

after completing market work and fulfilling any welfare participation requirements:

$$L_i = T_i - H_i - \sum_{k=1}^K P_{ki} \delta_k. \quad (2)$$

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.⁶

Consumption is the sum of after-tax income (labor and non-labor) and welfare benefits:⁷

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

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. Because child care costs have a large influence on the labor supply decision of single mothers, who are the focus of this study, these costs are captured by Ω_i , which is a function of hours worked and family characteristics. 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.

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

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

where $P_{ki} \in \{0, 1\}$. The individual bears psychological cost ϕ_i if she participates in any welfare

⁶This cost also captures any monetary costs associated with participation, such as transportation costs.

⁷There is no borrowing or saving in this model.

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.

The results from Keane and Moffitt (1998) provide primary support for this assumption. These authors use a structural model of multiple welfare program participation to determine whether the utility cost of participation is additive in the number of programs.⁸ They find that the estimated utility cost of participating in an additional welfare program is small, or that utility costs are nearly non-additive.⁹ This evidence supports our assumption that the psychological cost of welfare participation increases only in the extensive margin, not the intensive margin. 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). These two additional empirical findings are consistent with a large cost associated with participation in the first program and lower costs for additional programs, which is captured in our model by the single psychological cost and program-specific time costs.

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 (HH_i) and income into welfare benefits:

$$B_{ki} = b_k(w_i H_i, N_i, HH_i). \quad (5)$$

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

⁸Their intent was to model participation in three programs: AFDC, FSP, and subsidized housing, to determine the disincentives created by the interaction of benefit schedules from multiple programs. However, subsidized housing is different from the other two welfare programs in that it is rationed, meaning that even if the individual would optimally choose to participate, she may not be able to due to a queue. Because of this problem, Keane and Moffitt focus on participation in AFDC and FSP.

⁹They specify a program-specific utility cost of participation, ϕ_A for AFDC and ϕ_F for FSP. The agent's utility is given by:

$$U(\textit{leisure}, \textit{income}) - \lambda(\phi_A P_A + \phi_F P_F) - (1 - \lambda) \max(\phi_A P_A, \phi_F P_F)$$

where P_A and P_F indicate participation in the welfare programs and ϕ_A , ϕ_F , and λ are parameters to estimate. The value of λ is restricted such that $\lambda \in [0, 1]$. A value of λ close to 1 means that utility costs are perfectly additive, while a λ close to 0 implies that utility costs of participation are zero for additional programs. Keane and Moffitt estimate $\hat{\lambda} = 0.05$, or that utility costs are essentially non-additive. This finding is consistent with a large psychological cost from participating in the first program and a small cost, such as a time cost, associated with participating in an additional program.

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).

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).¹⁰ 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, because benefits from both programs are redeemed at a grocery store, the non-additivity assumption on psychological costs is most defensible.¹¹ In contrast to AFDC and TANF, most rules for FSP and WIC are set at the federal level.¹² 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.¹³ Throughout this paper, FSP is indicated by $k = 1$ and WIC is indicated by $k = 2$.

In order to separately estimate the two types of participation costs, we assume that the household head is aware of these two welfare programs and maximizes utility by choosing hours of work and whether or not to participate in welfare. This assumption is justifiable given the long history of these two programs (i.e., both began in the early 1970s) and prior empirical work on participation rates. 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.¹⁴

¹⁰As 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.

¹¹Using these two programs guards against the potential criticism that psychological costs could depend on one's social audience (Rogers-Dillon 1995).

¹²Temporary 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).

¹³Trippe 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 participation rates over the period.

¹⁴While children between ages one and five receive cereal, milk, cheese, and other food items, their combined value

Low WIC participation rates among families with children over age one is due to the drop in the value of benefits rather than a lack of information about the program. 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, which is consistent with individuals basing participation decisions on a cost-benefit calculation, as formulated in this paper.

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. 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.¹⁵ 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.¹⁶ 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.¹⁷

In this paper, FSP benefits, B_{1i} , are given by:

$$B_{1i} = \bar{B}_{1i} - 0.3(0.8w_iH_i + N_i - 125 \text{ children}_i) \quad (6)$$

where children_i is the number of children under age five in the household. The maximum benefit level, \bar{B}_{1i} , depends on the number of persons in the family. FSP benefits are reduced at a rate of

is approximately one-third the value of the infant formula.

¹⁵Actual 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.

¹⁶Assets 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.

¹⁷Keane and Moffitt (2002) use a similar FSP asset test limit of \$4,500.

30 percent for each additional dollar of net income (including transfers from AFDC or TANF).¹⁸

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 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.

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.¹⁹ 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 (Currie 2003).²⁰

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.

$$B_{2i} = \begin{cases} 0 & \text{if } i \text{ has no children } < \text{age 5 and is not pregnant} \\ \bar{B}_{2i} & \text{if } w_i H_i + N_i \leq 1.85(\text{poverty}_i) \text{ and } \{\text{children } < \text{age 5 or is pregnant}\} \end{cases} \quad (7)$$

where \bar{B}_{2i} 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

¹⁸While not explicit in equation 6, earned income includes all labor income in the household.

¹⁹Currently, 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>).

²⁰Women and children with low-income are classified as being nutritionally at risk.

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.gov/cpi

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 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.

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). 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.²¹

The selected sample represents a large fraction of welfare participants. In 1997, 60 percent

²¹Within 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 woman 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.

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.

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 1996.²² 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 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 5.2.

²²We also selected this wave due to availability of asset information in the topical module.

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 (<i>under age 18</i>)	39.3%	0.7%	0	1
Number of Children (<i>under age 18</i>)	0.7	0.02	0	10
Child under age 5 (<i>WIC eligible</i>)	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 (<i>weekly</i>)	\$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	Minimum	Maximum
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	Minimum	Maximum
Maximum FSP Benefits	\$208	\$108	\$121	\$1,180
Value of WIC Benefits (Child < 5 years old)	\$53	\$37	\$31	\$242
State Participation 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 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 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.

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).²³ This finding provides additional empirical support for our assumption that lack of information

²³For the 67 percent of households with an infant (not controlling for income) that chose to participate in WIC

is not a barrier to participation that was discussed in Section 3. This paper models all individuals as potentially eligible and participation is included among each individual’s choice set.²⁴

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 participation 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 participation rate.

4 Econometric and Functional Form Specification

Several reduced-form analyses of welfare participation provide insight into which factors are associated welfare stigma. Blundell, Fry and Walker (1988) find a positive relationship between benefit level in the U.K.’s Standard Housing Benefit and participation which is consistent with a welfare stigma model. They find that education and the age of children in the household affect the probability of participation, which suggests that these factors are correlated with welfare stigma because they do not directly determine the housing benefit level. 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

while the child is under age one, the value of these benefits outweigh the costs of participation. However, only half of those families continued to participate during the next year when the child is one and benefits are much lower, indicating that the costs of participation outweigh the benefits for non-participating families.

²⁴WIC eligibility is an exception because it requires the presence of a child under the age of five or a pregnant women in the household.

education attainment. Our analysis incorporates some of these characteristics in the estimation of psychological costs. Riphahn The psychological cost incurred by an individual from participating in either or both welfare programs, ϕ_i , is given by

$$\phi_i = X_i \beta + \eta_i \tag{8}$$

where X_i is a vector of observed characteristics for individual i and η_i is an error term that accounts for heterogeneity in psychological costs across individuals.

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

$$\gamma_i = Z_i \xi + \epsilon_i. \tag{9}$$

where Z_i is a vector containing race and age indicators and ϵ_i is an error term that accounts for heterogeneity in preference for leisure, such that higher values of ϵ_i correspond to higher preference for leisure.

The two error terms each have zero mean and are jointly normally distributed with a correlation of ρ . The stochastic process differs from that used by Keane and Moffitt (1998); they attach an error term to each participation equation, the hours equation, and the wage equation, while this study only includes two sources of heterogeneity: psychological cost and preference for leisure.

Because the functional form specification can influence the results, we perform the analysis under two different utility function specifications. Results from both specifications are given in Section 6. The first specification uses a CES utility function with the psychological cost term entering additively:

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

In this specification, the parameter α dictates the degree of substitutability between leisure and consumption.²⁵ The CES utility function (or the Cobb-Douglas special case) is commonly used in structural work. However, it does imply a constant budget share for leisure and consumption

²⁵If $\alpha = 1$, then consumption and leisure are perfect substitutes; as $\lim_{\alpha \rightarrow -\infty}$, leisure and consumption are complements.

regardless of income level. Our second utility specification allows for a quadratic leisure term as well as an additive psychological cost term:

$$U = (L_i) (C_i)^\alpha + \gamma_i (L_i)^2 - \Phi_i. \quad (11)$$

This is a flexible utility function that has the property that the marginal utility of leisure depends on the level of consumption. This is desirable because it allows leisure time to have a high marginal value for those with high consumption and a low value for those with low consumption. Similarly, individuals with low levels of leisure have a lower marginal utility of consumption.

The costs of welfare participation enter the utility function through both the psychological cost term and through the time constraint. The psychological cost, ϕ_i , is the same across programs and does not increase in the number of programs. The time requirements for each program are given by δ_1 and δ_2 . An individual's decision to participate in FSP is given by the indicator variable P_{1i} while P_{2i} indicates the individual's decision to participate in WIC. The welfare benefit level that the individual would receive from participating in FSP and WIC are given by B_{1i} and B_{2i} .

Take home income is given by Y_i , where $Y_i = w_i H_i + N_i - \tau_i(w_i H_i + N_i)$, the individual's wage and non-wage income less taxes.²⁶ The tax function, τ_i , gives the federal income tax liability and depends on i 's family characteristics and includes deductions, exemptions, and the EITC. We ignore all state and local taxes.

Thus, by substituting these expressions into 1, we obtain the following expression for the individual's utility:

$$U\left(TE - H_i - P_{1i}\delta_1 - P_{2i}\delta_2, Y_i + P_{1i}B_{1i} + P_{2i}B_{2i}\right) - P_{1i}\phi_i - P_{2i}\phi_i + P_{1i}P_{2i}\phi_i \quad (12)$$

We estimate the utility function parameters, time endowment and time cost parameters, the parameters of the psychological cost equation as well as ξ , σ_ϵ , σ_η , and ρ . 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.

²⁶While the model included cost of childcare, this term is currently not included in the econometric specification.

5 Estimation

5.1 Procedure

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 .²⁷ The log-likelihood for individual i is given by:

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

where $k \in \{1, 2, 3, 4\}$ 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) for the error terms in the psychological cost and leisure preference equations, η and ϵ , are each taken from a standard normal distribution. Given the vector of parameter values, θ , the error terms are scaled by σ_η , σ_ϵ , and ρ . The simulated probability $\Pr_S[h_i, P_{1i}, P_{2i}]$ is given by:

$$\Pr_S[h_i, P_{1i}, P_{2i}] = \frac{1}{D} \sum_{d=1}^D \mathbf{1}(h_{id} = h_i, P_{1id} = P_{1i}, P_{2id} = P_{2i}) \quad (13)$$

where d indicates a simulation draw for η and ϵ . 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. A simplex method is used 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 was found, the robustness of the parameter estimates to different initial parameter values and the fact that the

²⁷Observed 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.

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.²⁸ The matrix of contribution to the gradient is an $N \times J$ matrix where N is the number of observations and J is the dimension of the vector of parameters, θ . The elements of $G(\theta)$ are given by:

$$G_{ij}(\theta) = \frac{\partial \ln \ell_i(\theta)}{\partial \theta_j} \quad (14)$$

and are calculated using the finite difference method.

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

$$V(\hat{\theta}) = \left[G'(\hat{\theta})G(\hat{\theta}) \right]^{-1}. \quad (15)$$

5.2 Wage Imputation

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. If the hourly wage implied by observed earnings and labor supply was below the minimum wage, the individual's wage was set equal to the federal minimum wage of \$4.75.²⁹ About one quarter of the women in the sample do not participate in the labor market and thus do not have an observable wage. We predict a wage for these women using a Heckman selection procedure.³⁰ Table 4 shows the estimates from the log wage equation and selection equation assuming a joint normal distribution.

The estimates correspond to those typically found in the literature: wage is concave in age,

²⁸The 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.

²⁹The minimum wage floor was imposed on less than 5 percent of the sample.

³⁰The paper's main results do not vary if wage is estimated within the model, but the fit worsens and increases the computation burden. Keane and Moffitt (1998) also predict wages outside of their primary estimation apparatus.

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 wage for those with positive hours is \$11.79 per hour. Wages for those with zero hours are predicted using the results from the Heckman selection procedure. The mean predicted wage of those with positive hours is \$9.48, over two dollars less than those with positive hours of market work.

Table 4: Hourly Wage - Heckman Selection Correction

Characteristics	Ln Wage		Positive Hours	
	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%

6 Results

We apply the procedure outlined in Section 5.1 to compute estimates of the structural parameters from the model developed in Section 2. The estimates for the psychological costs in terms of weekly dollars for both utility specifications are given in Table 5, while the estimates of the time

requirements and other utility parameter estimates are shown in Table 6. The parameter estimates in terms of utility units for both the psychological cost and preference for leisure are listed in the Appendix (Tables 9 and 10)

In order to express the psychological cost parameter estimates in dollar terms (as in Table 5), the level of additional consumption that would be needed to exactly offset the change in utility implied by each psychological cost parameter is calculated. This conversion to \$1997 dollars is performed for both utility specifications at the mean value for all variables. The standard errors are converted from utility terms into dollars using this same method.

For both specifications, the psychological costs of welfare participation are highest for women born in the 1940s and lowest for women born in the 1960s, but are relatively non-monotonic across the 10-year birth cohorts. Costs of participation are strongly increasing in educational attainment, which is consistent with results from previous studies which found that the probability of welfare participation is decreasing in educational attainment: one additional year of schooling increases psychological costs by approximately \$21 a week. Living in an urban area does not significantly increase psychological costs, but living in the South is estimated to increase psychological costs by either \$50 or \$30 a week depending on the utility specification. Women who identified themselves as black have significantly lower psychological costs relative to whites and other racial-ethnicity groups, but the magnitude is quite different across the two specifications. As expected, higher participation rates in AFDC reduce the psychological costs of participation in food stamps or WIC for women in those same states: a 10 percent increase in AFDC participation rate at the state-level reduces psychological costs by approximately \$4.00 to \$4.60 a week.

The average predicted weekly psychological costs associated with participation for this population is approximately \$277 (\$278) for the alternative (CES) utility specification. This value varies by participation status: women who participate in either program have psychological costs of approximately \$216 (\$232) for the alternative (CES) specifications, while non-participants have psychological costs of approximately \$289 (\$287). As expected, psychological costs are lower for non-participants. However, the dollar equivalent of psychological costs are high relative to weekly benefits for non-participants as well as participants. It is important to note that it is not inconsistent with our model for individuals with predicted psychological costs that outweigh welfare

Table 5: Psychological Cost Estimates: \$1997 Dollar Equivalent

Variable	Alternative Utility 1	CES Utility 2
Born before 1940	18.42 (10.77)	4.18 (3.49)
Born in 1940s	50.97** (22.64)	2.97* (1.11)
Born in 1950s	5.35 (4.69)	7.34** (0.88)
Born in 1960s	-7.00 (4.91)	-40.52** (3.06)
<i>Excluded: Born in 1970s</i>		
Years of Schooling	20.98** (0.79)	21.18** (0.24)
Urban	0.58 (4.36)	4.50 (2.44)
Teen in Household	13.60 (7.83)	3.51 (3.15)
South	49.77** (11.65)	30.01** (2.53)
Hispanic	7.60 (7.96)	11.86 (7.18)
Black	-91.59** (17.16)	-12.45** (1.32)
Native Amer. or Asian	-28.21 (25.24)	-7.34 (5.92)
AFDC Rate by State (<i>fraction</i>)	-46.23** (13.86)	-40.29** (8.22)
Constant	-1.29 (2.08)	-17.57 (3.49)

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

Table 6: Time Requirements and Utility Parameter Estimates

Variable	Alternative	CES
	Utility	Utility
	1	2
FSP Time Requirement (δ_1)	0.805** (0.043)	0.760** (0.067)
WIC Time Requirement (δ_2)	1.671** (0.055)	1.466** (0.008)
ρ	-0.030 (0.001)	-0.078 (0.001)

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

benefits to choose to participate in welfare due to the presence of individual-level shocks in the model.

Table 6 shows the estimates for δ_1 , the time requirement of FSP, and δ_2 , the time requirement associated with WIC for both specifications. These estimates imply that receiving benefits and maintaining eligibility for FSP requires 0.8 hours a week. The estimated time cost associated with obtaining benefits through WIC is higher: approximately 1.7 hours a week for the alternative utility specification and 1.5 for CES utility. Receipt of benefits through WIC involves doctors visits, nutritional education, and more frequent office visits, which explains the greater time requirement. By multiplying the time requirement associated with each program by the wage (or predicted wage) for each participant, we get an estimate of the time cost of participation: for those who participate in either program, the average time cost is \$9.42 (\$8.64) for the alternative (CES) utility specification. In combination, the estimated time costs and psychological costs are less than the \$345.63 consumption value of the utility cost implied by Moffitt's (1983) estimation.³¹

Table 6 also compares the relative magnitude of time costs to psychological costs. Therefore, the psychological costs incurred due to participation are substantially higher than the time costs (by an order of 20). If you compare the difference in psychological costs between participants in non-participants (e.g. \$289 - \$216 = \$73), the psychological costs are about 8 times as large as the

³¹Using the Moffitt (1983) model and parameter estimates, we calculate the level of consumption needed to offset the estimated utility cost of participation. In 1976 dollars, this is \$122.53. Our estimation is in 1997 dollars; the CPI-U is used for the inflation adjustment.

time costs incurred. Because psychological costs are substantially more influential than time costs in affecting an individual’s decision to participate in welfare, this implies that there are greater 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.

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. Tables 7 and 8 show actual versus predicted participation behavior for FSP and WIC for the CES specification. The predicted participation choice for each individual is calculated as the participation combination that yields the highest utility given a value of zero for both 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 84 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; the model seems to err most in terms of under-predicting participation.

Table 7: FSP Participation, Actual and Predicted Percentages

	Predicted Non-Participant	Predicted Participant	Total
Actual Non-Participant	77.48	6.03	83.50
Actual Participant	10.03	6.46	16.50
Total	87.51	12.49	100

It is important to note that these results rely not only on the data selected for the exercise but also on the specification of the model. In particular, we achieve identification from the assumption

Table 8: WIC Participation, Actual and Predicted Percentages

	Predicted Non-Participant	Predicted Participant	Total
Actual Non-Participant	92.53	1.66	94.18
Actual Participant	3.30	2.51	5.81
Total	95.83	4.17	100

that psychological costs do not increase in the number of programs and the specification of the utility function (i.e. how time and psychological costs enter the utility function).³²

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 cost 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. 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

³²The relative importance of these assumptions in achieving identification is unclear.

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.³³ 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 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.³⁴ 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

³³For 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.

³⁴Otherwise, these low-types would have earned an income level less than I_L .

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 government because time costs are higher for individuals with high wages. However, we focus on the relationship between psychological costs and ability (or preference for leisure) because we found in the primary analysis that the individual-level costs due to stigma dominate time costs in terms of magnitude.

To evaluate whether stigma is an effective screening mechanism, we compute the predicted psychological costs and leisure preference at the individual level using the estimates in Tables 9 and 10 in the Appendix. We then regress predicted psychological costs on leisure controlling for income. For both specifications of the utility function, we find a negative relationship between leisure and psychological costs. In addition, we estimate the correlation between the unobservables affecting leisure and those affecting psychological costs to be negative (ρ in Table 6). This implies that psychological costs are higher for those with a lower preference for leisure, which corresponds to decreasing differences between psychological costs and worker's ability type. Hence, we conclude that stigma is unlikely to be an effective screening mechanism and that individual-level costs due to stigma are not offset by any social benefit due to their screening role.

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. However, time costs depend on the number and type of programs.

We find that the time requirement associated with participation in FSP is just under one hour

a week or approximately 4 hours a month. The estimated time requirement associated with WIC is much higher: 1.7 hours a week (about 8 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 frequent office visits. By evaluating the time requirement at the individual's wage, the time costs associated with participation in welfare are approximately \$9.50 a week for participants (\$1997 dollars).

We compute the implied dollar equivalent of the psychological costs associated with participation to be approximately \$280 for non-participants and \$216 for participants. Psychological costs strongly increase in educational attainment and are significantly lower for women who identify themselves as black. We find that psychological costs are the dominant cost associated with welfare participation. 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 (i.e. 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 (i.e. differ in social audience) or that are used in the same environment, but differ in transparency of usage.

The estimated model could also 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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A Appendix: Additional Results

Table 9: Psychological Cost Estimates: Utility Units

Psychological Cost Equation		
Variable	Alternative Utility 1	CES Utility 2
Born before 1940	393.401 (230.913)	48.635 (69.385)
Born in 1940s	1068.430** (482.329)	33.469** (12.971)
Born in 1950s	115.145 (100.912)	85.144** (10.225)
Born in 1960s	-151.661 (105.731)	-495.344** (35.693)
<i>Excluded: Born in 1970s</i>		
Years of Schooling	477.218** (17.046)	242.083** (2.792)
Urban	12.426 (93.787)	52.313 (28.496)
Teen in Household	291.155 (168.345)	40.861 (336.678)
South	1043.960** (249.802)	339.826** (29.477)
Hispanic	163.450 (170.987)	136.859 (83.302)
Black	-2097.490** (366.615)	-147.424** (15.353)
Native Amer. or Asian	-619.500 (536.748)	-86.416 (68.698)
AFDC Rate by State (<i>fraction</i>)	-1027.12 (296.720)	-492.316 (95.166)
Constant	-27.952 (44.866)	-209.291** (40.626)

Table 10: Preference for Leisure Parameter Estimates

Variable	Alternative Utility 1	CES Utility 2
constant	19.746** (0.243)	73.656** (0.034)
schooling	-2.970** (0.015)	-3.721** (0.001)
south	-0.889** (0.047)	-1.081** (0.023)
Children	-0.321 (0.013)	-1.933 (0.019)
Hispanic	-2.169 (0.189)	-1.534 (0.225)
Black	3.355 (0.137)	0.378 (0.378)
Asian or Native American	1.742 (0.234)	0.116 (0.116)
Over 50, but less than 55	-1.857 (0.379)	0.511 (0.052)
Over 50, but less than 60	1.865 (0.456)	-0.421 (0.132)
Over 50, but less than 65	0.237 (0.154)	2.529 (0.024)
Utility Parameters		
α	0.378 (0.002)	-0.283 (0.000)
σ_ϵ	13,063.500 (469.483)	2876.15 (31.668)