Marriage, Work, and Welfare Dependency

Seokpyo Hong

There are two routes to self-sufficiency for a female on welfare: work or marriage. This paper analyzes a woman's probability of being on welfare, decomposing it into the probability of work and the probability of being married. The marriage and work decision process will be influenced by both expected economic benefits and costs. An economic benefit of not being married and not working is public welfare benefits. Higher welfare benefits reduce the net cost of an out-of-wedlock fertility and so affect both marriage and work decisions. When the individual expects benefits from welfare over the financial cost of having an out-of-wedlock birth, she may choose having an out-of-wedlock fertility and receiving the public support (welfare benefits) over marriage or work.

Our empirical results suggest that economic incentives created by public welfare policy influence marital and work decisions, and, as a result, the incidence of welfare dependence. Specifically, the amount of welfare benefits significantly affects the probabilities of both marriage and work and thus changes the probability of welfare recipiency. Therefore the welfare reform needs to focus on the individual's incentive mechanism of marriage and work.

Key word : welfare dependency, probability of being on welfare, public welfare benefits

---

筆者: 本院 責任研究員

▶ 원고를 검독하여 주신 元鍾旭 副硏究委員과 金美淑 責任硏究員께 감사드립니다.

I. Introduction

After the United States declared War on Poverty in the 1960s, the poverty rate declined from 22.2 percent in 1960 to 12.1 percent in 1969, remained between 11 and 13 percent for the entire 1970s, and then increased during the 1980s and the early 1990s (U.S. Bureau of the Census, 1995). In 1993, the poverty rate was 15.1 percent. The failure of the poverty rate to decline during the 1970s and its subsequent rise in the 1980s and early 1990s was mostly due to the growth of poor female-headed families.

The proportion of all families in the United States headed by women with children has increased in recent decades, increasing from 5.7 percent in 1970 to 11.6 percent in 1990. A large proportion of the female-headed families are poor, since female-headed families usually have lower income than husband-wife families. In 1990, the poverty rate for female-headed families with children under 18 years (44.5 percent) was approximately six times the rate for married-couple families with children under 18 years (7.8 percent), and more than twice the rate for such families headed by males (U.S. Bureau of the Census, 1991). The increase in number of female-headed families is, therefore, a cause of the feminization of poverty and the decline in the economic position of children.

A further concern has arisen over the growing number of female heads of family because they constitute the prime group eligible for welfare programs. In 1990, 68.6 percent of persons in female-headed families with children received some form of government assistance, and 94 percent of those below the poverty line received some form of public assistance, including both cash assistance and noncash assistance, such as food stamps, Medicaid, and public housing. More than two-thirds (69.5 percent) of persons in female-headed families with children under 18 years and who lived below the poverty line received AFDC (Aid to Families with Dependent Children, the best known cash transfer welfare program in the United States) in 1990 (U.S. Bureau of the Census, 1991).

Over the past three decades the number of families headed by a single mother has grown enormously. As the number of families headed by a single mother has increased, so has the Aid to Families with Dependent Children (AFDC) program. Between 1965 and 1990, AFDC population grew more than 300 percent and government spending on AFDC benefits more than tripled in a real term. With the increase in illegitimate birth rates and the high rate of divorce, the size of the female-headed population will continue to grow, increasing the incidence of welfare dependence.

There are just two routes to self-sufficiency for a female from welfare dependence-marriage or work. This paper analyzes a woman's probability of being on welfare, decomposing it into the probability of being married (marriageability) and the probability of work (workability).

The previous AFDC participation studies based on female heads with dependent children posit that a female participates in the AFDC program if participation increases her utility (Barr and Hall 1981; Hutchens 1981; Bane and Ellwood 1983; Moffitt 1983; O Neill, Bassi and Hannan 1984; Robin 1986; Blank 1989a; Blank 1989b; Fitzgerald

1991). However, the previous welfare participation studies overlook the joint endogenity of a female's marriage and work decisions. The marriage and work decision process will be influenced by both expected economic benefits and costs. An economic benefit of not being married and not working is public welfare benefits. Higher welfare benefits reduce the net cost of an out-of-wedlock fertility and so affect both marriage and work decisions. When the individual expects benefits from welfare over the financial cost of having an out-of-wedlock birth, she may choose having an out-of-wedlock fertility and receiving the public support (AFDC benefits) over marriage or work.

Unlike other welfare participation studies, the analysis in this paper is based on data not only female heads with dependent children but all women who are aged between 16 and 60, since marriage, work, and fertility decisions are influenced by economic benefits and costs. An empirical model is developed to analyze the influence of the economic benefits and costs to marriage and work decisions created by public welfare policy. A probit model is used to estimate the determinants of each outcome. The model is estimated using data from the Michigan Panel Study of Income Dynamics (PSID) between 1975 and 1987. By using an empirical model, we analyze the effectiveness of public welfare policy on marital and work decisions during the sample period.

This paper is organized as follows: section II presents the empirical model to be estimated and discusses the data used in estimation, section III presents the empirical results, and section IV concludes.

Ⅱ. A Model of the AFDC Recipiency

1. Model Specification

A female qualifies for the AFDC program when she is not married and does not work.

We define

Q (qualification for AFDC Recipiency) = 1 if qualifies for AFDC benefits
0 otherwise

M (marital Status) = 1 if married
0 otherwise

W (work status) = 1 if labor income is larger than state AFDC maximum guarantee amount
0 otherwise

Then the probability of qualified for AFDC Recipiency, P(Q=1), can be expressed as the following joint event probability:

$$(1)\quad P(Q=1) = P(M=0 \cap W=0) = P(M=0) \times P(W=0 \mid M=0)$$

Some individuals in the low-income population who are eligible for income-tested welfare (AFDC) benefits might not apply for AFDC benefits. This behavior of some females in the low-income population may result from welfare stigma. Since income-tested AFDC program participation stigmatizes the recipient, the stigma effect labels the individual who declares herself poor in order to receive benefits as a deviant from society's norms and values. The reverse of the stigma effect is the probability of AFDC participation among the AFDC eligible population, P(A=1 | M=0, W=0). Therefore, the probability of AFDC Recipiency, P(AFDC=1), is:

$$(2)\ P(AFDC=1) = P(Q=1) \times P(A=1 \mid M=0, W=0)$$
$$= P(M=0) \times P(W=0 \mid M=0) \times P(A=1 \mid M=0, W=0)$$

2. Estimation Procedure

A. Bivariate Probit Model of Marriage and Work

According to female labor participation studies, there is a strong correlation between female labor force participation decisions and marital status decisions. Many empirical studies show that marital status decisions depend on various characteristics of the female which also affect her labor supply decision. According to Becker's (1981) theory of marriage, marital gains can be derived from the specialization of labor within the household. Net gains from marital union and marital status decisions depend on a woman's ability to work (workability). If women with low workability have larger net gains from marriage than women with high workability, then women with low workability opt to choose a married state. Therefore, a woman with low workability will choose to supply less market labor than a high workability woman and choose the married state since these will increase the economic value of marriage through the specialization of labor within family.

Since a female's marital decision affects her work decision and vice versa, the estimates of univariate probit models of marriage and work would not be efficient. Therefore, a bivariate probit model is used to estimate the joint probability of marriage and work.

The bivariate probability model of marriage and work, P(M, W), is as follows:

(3) $M \equiv Y_m{*}= \beta_m{}'X_m + u_m$, M = 1 if $Y_m{*} > 0$, 0 otherwise,

(4) $W \equiv Y_w{*}= \beta_w{}'X_w + u_w$, W = 1 if $Y_w{*} > 0$, 0 otherwise,

(5) $E[u_m] = E[u_w] = 0$,

(6) $Var[u_m] = Var[u_w] = 1$,

(7) $Cov[u_m, u_w] = \rho$

where ρ (rho) is the correlation coefficient and β_m is the parameter vector of the marriage equation, X_m is a vector of variables determining the marriage decision, and u_m is a random error term of the marriage equation, while β_w is the parameter vector of the work equation, X_w is a vector of variables determining the work decision, and u_w is a random error term of the work equation.

Let M_i and W_i be binary variables having a joint probability density

(8) $P_{mw}(i) = P(M_i{=}m, W_i{=}w)$, (m, w=0, 1; i=the observation index)

The bivariate probit model of probabilities of marriage and work are given by (Morimune, 1979):

(9) $P_{11}(i) = \Phi_\rho (\beta_m{}'X_{mi} , \beta_w{}'X_{wi})$,

$P_{11}(i) + P_{10}(i) = \Phi (\beta_m{}'X_{mi})$,

$P_{11}(i) + P_{10}(i) = \Phi (\beta_w{}'X_{wi})$

where Φ_ρ is the cumulative bivariate normal distribution function with zero means, unit variances, and correlation coefficient ρ, and Φ is the standard normal distribution function.

The probability of marriage, P(M=1), is specified as:

(10) $P(M=1) = Pr\{(\beta_m'X_m + u_m)>0\}$

The probability of not being in marriage, P(M=0), is

(11) $P(M=0) = 1 - P(M=1)$

$= 1 - Pr(u_m > -\beta_m'X_m)$

$= Pr(u_m < -\beta_m'X_m)$

If the cumulative distribution of u_m is the normal, we have the probit model. Then the probability of not being in marriage is:

(12) $P(M=0) = \Phi(-\beta_m'X_m)$

The probability of work, P(W=1), is as follows:

(13) $P(W=1) = Pr\{(\beta_w'X_w + u_w)>0\}$

The bivariate conditional probability of not work, given not being married, is expressed as

(14) $P(W=0 \mid M=0) = P(M=0, W=0)/ P(M=0)$

The bivariate probability of not being married and not working, P(M=0, W=0), is

(15) $P(M=0, W=0) = 1 - P(M=1, W=1) - P(M=1, W=0) - P(M=0, W=1)$

Then the bivariate probit model of not being married and not working is

(16) P(M=0, W=0) = Φ_{ρ} ($\beta_m{}'X_m$, $\beta_w{}'X_w$)

The conditional probability of not working, given not being married, P(W=0 | M=0), can be expressed as follows:

(17) P(W=0 | M=0) = Φ_{ρ} ($\beta_m{}'X_{mi}$, $\beta_w{}'X_{wi}$)/ Φ ($\beta_m{}'X_m$)

Estimating the model requires the maximum likelihood method (Schmit and Strauss, 1975). If we define

(18) Φ_{mw} = {i | M_i=m, W_i=w} (m, w=0, 1; i=the observation index)

then the likelihood function is

(19) L = $\prod_{i=1}^{N} \prod_{m=0}^{1} \prod_{w=0}^{1} \prod_{i \in \theta_{mw}} P(M_i = m, W_i = w)$

where N is the number of individuals in the sample.
Maximum likelihood estimates of m and w can be obtained by the maximization of (19).

B. Univariate Probit Model of AFDC Participation

We define

A (participation for the AFDC benefits among the AFDC eligible population)
= 1 if participate in the AFDC program
0 otherwise

Then the probability of AFDC participation among the AFDC eligible population, P(A=1 | M=0, W=0), is specified as follows:

(20) P(A=1 | M=0, W=0) = $Pr(u_a < \beta_a' X_a)$,

where a is the parameter vector of the AFDC participation equation, X_a is a vector of variables determining the AFDC participation equation, and u_a is a random error term of the AFDC participation equation. When u_a has a normal distribution, then the probability of AFDC participation among the AFDC eligible population is:

(21) P(A=1 | M=0, W=0) = $\Phi(\beta_a' X_a)$.

C. Estimation of the Probability of AFDC Recipiency

By using the bivariate probit model, equations (12) and (17) are estimated. Equation (21) is estimated using the univariate probit model. The procedure used in the estimation is the maximum likelihood method. The likelihood function of marriage and work is shown in equation (19). The likelihood function of AFDC participation among the AFDC eligible sample equation is as follows:

(22) $$L = \prod_{i=1}^{N} [F(\beta_a' X_{ai})]^{A_i} [1 - F(\beta_a' X_{ai}]^{1-A_i},$$

where F is the cumulative distribution function for u_a.

For each year, with the sample period from 1975 to 1987, equations were estimated by using the probit procedure in LIMDEP statistical software. Given estimates $\hat{\beta_m}$, $\hat{\beta_w}$, $\hat{\beta_a}$, the estimate of probability of AFDC recipiency for a woman with characteristics X_m , X_w and X_a is estimated by:

(23) $\hat{P}(AFDC=1) = \hat{P}(M=0 \cap W=0) \times \hat{P}(A=1 \mid M=0, W=0),$
$= \hat{P}(M=0) \times \hat{P}(W=0 \mid M=0) \times \hat{P}(A=1 \mid M=0, W=0)$

Assume $\hat{P}(A=1 \mid M=0, W=0)$ is equal to $\hat{P}(A=1)$, then equation (23) can be rewritten as

(24) $\hat{P}(AFDC=1) = \hat{P}(M=0) \times \hat{P}(W=0 \mid M=0) \times \hat{P}(A=1)$
$= \hat{P}(W=0) \times \hat{P}(M=0 \mid W=0) \times \hat{P}(A=1)$

where $\hat{P}(M=0) = \Phi(-\hat{\beta}_m' X_m)$, $\hat{P}(W=0) = \Phi(-\hat{\beta}_w' X_w)$,
$\hat{P}(W=0 \mid M=0) = \Phi_\rho(-\hat{\beta}_m' X_m, -\hat{\beta}_w' X_w) / \Phi(-\hat{\beta}_m' X_m)$,
$\hat{P}(M=0 \mid W=0) = \Phi_\rho(-\hat{\beta}_m' X_m, -\hat{\beta}_w' X_w) / \Phi(-\hat{\beta}_w' X_w)$,
$\hat{P}(A=1) = \Phi(-\hat{\beta}_a' X_a)$

3. Data and Variable Specification

The samples used in this research are from the Michigan Panel Study of Income Dynamics (PSID). The PSID started in 1968 with a sample of approximately five thousand households, which included a sample that was representative of all households in 1968 and a supplementary low-income sample. Household heads were interviewed annually to obtain detailed information on economic and demographic characteristics and on each member's prior year's earnings and labor force behavior. The analysis in this paper is based on the data on all women aged between 16 and 60. The PSID does not provide information on important variables such as income and work experience for women who are below 16 years old. Since the PSID provides some detailed information only after 1974, the sample period is limited to the period between 1975 and 1987.

Each year we estimate a bivariate probit model of marriage and work using PSID female sample and a univariate probit model of AFDC participation among the AFDC eligible sample. Independent variables of the probit models consist of public welfare policy variables and personal characteristic variables which influence the individual woman's choice regarding marriage, work, and AFDC participation. Table 1 and Table 2 present variable definitions and expected signs of the variable used in the analysis respectively.

Table 1. Definitions of the Variables Used in the Analysis

Variables	Definitions
M	• equals 1 if married, 0 if otherwise
W	• equals 1 if labor income is larger than state AFDC maximum guaranteed amount and 0 if otherwise
AFDC	• equals 1 if the individual receives AFDC benefits, 0 if otherwise
AGE	• age of the individual
AGESQ	• age times age
CITYSIZE	• population size of largest city in county of residence
KID	• number of children
ED	• equals 1 if 12 years of education or above and 0 if otherwise
BLACK	• equals 1 if black and 0 if otherwise
UR	• county unemployment rate
OTINCOME	• family income minus the individual's labor income(husband's income is included for the married)
GUARANTEE	• maximum guaranteed amount of AFDC cash benefits by the state
NLINCOME	• the individual's own nonlabor income
CATHOLIC	• equals 1 if Roman Catholic and 0 if otherwise
ONEPARENT	• equals 1 if not lived with both parents while growing up and 0 if otherwise
A	• equals 1 if the individual who is eligible for AFDC participates in AFDC, 0 if otherwise

Note : All dollar figures are expressed in 1983 dollars.

Sources: GUARANTEE-Social Security Bulletin, Annual Statistical Supplement (1976~1987).
All other data from the PSID.

Table 2. Expected Signs of the Variables Used in the Analysis

Probability of Variable	Probability of Marriage	Probability of Work	Probability of AFDC Participation
AGE	+	+	?
AGESQ	−	−	?
CITYSIZE	−	+	n/a
ED	+	+	−
BLACK	−	?	+
NLINCOME	−	n/a	−
OTINCOME	n/a	−	n/a
GUARANTEE	−	−	+
CATHOLIC	+	n/a	n/a
KID	n/a	−	n/a
UR	n/a	−	n/a
ONEPARENT	−	n/a	n/a

Note: n/a=not available

Ⅲ. Empirical Results

1. Model Estimates

A. Marriage Equation

Table 3 presents parameter estimates from the bivariate probit model of marriage. The variables age (AGE) and age squared (AGESQ) have significant impacts on the probability of marriage. The coefficients for age and age squared suggest that age has at first a positive and then a negative effect on the probability of marriage. Residence in a large population area has a significant negative effect on the probability of marriage, as expected.

Table 3. Bivariate Probit Estimates of the Probabilities of Marriage and Work

Variagle	Year 1975 M	Year 1975 W	Year 1976 M	Year 1976 W	Year 1977 M	Year 1977 W
CONSTANT	-0.181 (-0.582)	-1.123 (-3.531)**	-0.514 (-1.697)	-1.055 (-3.426)**	-0.967 (-3.052)**	-1.379 (-4.326)**
AGE	0.88E-01 (5.263)**	0.93E-01 (5.380)**	0.104 (6.476)**	0.86E-01 (5.102)**	0.123 (7.187)**	0.104 (5.984)**
AGESQ	-0.11E-02 (-5.361)**	-0.12E-02 (-5.379)**	-0.13E-02 (-6.393)**	-0.11E-02 (-5.145)**	-0.15E-02 (-7.067)**	-0.13E-02 (-6.234)**
CITYSIZE	-0.47E-06 (-6.995)**	0.10E-06 (1.690)	-0.42E-06 (-6.654)**	0.12E-06 (2.219)**	-0.38E-06 (-5.358)**	0.13E-06 (2.102)*
ED	0.144 (2.093)*	0.416 (6.457)**	0.211 (3.299)**	0.352 (5.759)**	0.284 (4.268)**	0.494 (7.741)**
BLACK	-0.782 (-11.732)**	0.135 (2.139)*	-0.801 (-12.823)**	0.155 (1.922)	-0.817 (-12.735)**	0.39E-01 (0.628)
KID		-0.102 (-9.769)**		-0.104 (-9.873)**		-0.71E-01 (-6.664)**
UR		-0.25E-01 (-2.776)**		-0.30E-01 (-3.369)**		-0.31E-01 (-2.695)**
NLINCOME	-0.21E-03 (-23.176)**		-0.24E-03 (-29.518)**		-0.26E-03 (-25.143)**	
OTINCOME		-0.72E-05 (-4.379)**		-0.66E-05 (-4.493)**		-0.84E-05 (-5.064)**
GUARANTEE	-0.42E-04 (-1.825)	-0.13E-03 (-6.110)**	-0.78E-04 (-3.328)**	-0.10E-03 (-4.826)**	-0.70E-04 (-3.245)**	-0.11E-03 (-5.592)**
CATHOLIC	0.83E-01 (1.084)		0.65E-01 (0.882)		0.66E-01 (0.863)	
ONEPARENT	-0.175 (-2.702)**		-0.141 (-2.321)*		-0.135 (-2.191)*	
$\rho^{1)}$	-0.207 (-5.129)		-0.185 (-4.897)		-0.201 (-4.986)	
Log-Likelihood	-3083		-3399		-3110	
∂ Pr(M=1) / ∂ GUARANTEE[2)]	-1.29E-05		-2.54E-05		-2.30E-05	
∂ Pr(W=1) / ∂ GUARANTEE[3)]		-5.13E-05		-4.15E-05		-4.41E-05

Notes: t-ratios are in parentheses.

1) correlation coefficients of bivariate probit model of marriage and work

2) $\beta_{GUARANTEE}\,\phi(\beta_m{}'\bar{X}_m)$ where ϕ is the standard normal probability density function.

3) $\beta_{GUARANTEE}\,\phi(\beta_w{}'\bar{X}_w)$ where ϕ is the standard normal probability density function

* Significant at the 5% level, ** Significant at the 1% level

Table 3. Continued

Variagle	Year					
	1978		1979		1980	
	M	W	M	W	M	W
CONSTANT	−0.998	−1.064	−2.988	−1.540	−3.369	−1.744
	(−3.267)**	(−3.454)**	(−10.945)**	(−6.110)**	(−12.697)**	(−7.227)**
AGE	0.117	0.85E−01	0.211	0.121	0.223	0.126
	(7.136)**	(5.213)**	(14.087)**	(8.847)**	(15.506)**	(9.666)**
AGESQ	−0.14E−02	−0.11E−02	−0.25E−02	−0.16E−02	−0.26E−02	−0.16E−02
	(−6.903)**	(−5.663)**	(−13.007)**	(−9.238)**	(−14.013)**	(−9.902)**
CITYSIZE	−0.35E−06	0.71E−07	−0.43E−06	0.13E−06	−0.41E−06	0.73E−07
	(−5.203)**	(1.146)**	(−6.953)**	(2.358)*	(−6.721)**	(1.311)*
ED	0.295	0.428	0.412	0.516	0.361	0.552
	(4.498)**	(6.890)**	(6.968)**	(9.179)**	(6.357)**	(10.248)**
BLACK	−0.784	0.63E−01	−0.734	0.79E−03	−0.728	0.84E−01
	(−12.413)**	(1.058)	(−12.732)**	(0.014)	(−13.039)	(1.601)
KID		−0.74E−01		−0.71E−01		−0.70E−01
		(−6.989)**		(−7.015)**		(−6.753)**
UR		−0.15E−01		−0.40E−01		−0.47E−01
		(−1.388)		(−3.603)**		(−5.115)**
NLINCOME	−0.10E−03		−0.60E−04		−0.18E−03	
	(−27.254)**		(−22.576)**		(−37.218)**	
OTINCOME		−0.40E−05		−0.71E−05		−0.12E−05
		(−3.583)**		(−8.154)**		(−2.707)**
GUARANTEE	−0.76E−04	−0.11E−03	−0.93E−04	−0.12E−03	−0.82E−04	−0.10E−03
	(−3.548)**	(−5.802)**	(−5.057)**	(−7.016)**	(−4.364)**	(−5.752)**
CATHOLIC	0.35E−02		0.34E−01		0.49E−01	
	(0.050)		(0.517)		(0.733)	
ONEPARENT	−0.76E−01		−0.95E−01		−0.115	
	(−1.273)		(−1.683)		(−2.170)*	
ρ[1]	−0.201		−0.161		−0.182	
	(−5.615)		(−4.738)		(−5.783)	
Log−Likelihood	−3402		−3777		−4139	
∂Pr(M=1) / ∂GUARANTEE[2]	−2.51E−05		−3.44E−05		−3.09E−05	
∂Pr(W=1) / ∂GUARANTEE[3]		−4.57E−05		−5.03E−05		−4.23E−05

Table 3. Continued

Variagle	Year					
	1981		1982		1983	
	M	W	M	W	M	W
CONSTANT	−3.624 (−13.321)**	−2.008 (−7.923)**	−3.420 (−12.937)**	−1.862 (−7.391)**	−3.327 (−12.863)**	−2.377 (−9.173)**
AGE	0.224 (15.307)**	0.146 (10.807)**	0.208 (14.622)**	0.145 (10.940)**	0.200 (14.271)**	0.167 (12.512)**
AGESQ	−0.25E−02 (−13.671)**	−0.18E−02 (−10.871)**	−0.23E−02 (−12.740)**	−0.18E−02 (−11.041)**	−0.22E−02 (−12.515)**	−0.21E−02 (−12.479)**
CITYSIZE	−0.43E−06 (−6.407)**	0.92E−07 (1.499)	−0.43E−06 (−6.921)**	0.18E−06 (3.145)**	−0.43E−06 (−6.863)**	0.17E−06 (2.827)*
ED	0.342 (5.783)**	0.538 (9.438)**	0.380 (6.445)**	0.566 (10.081)**	0.318 (5.512)**	0.537 (9.524)**
BLACK	−0.750 (−12.741)**	−0.126 (2.249)*	−0.740 (−13.301)	−0.133 (−2.493)	−0.732 (−13.297)**	−0.165 (−2.968)**
KID		−0.68E−01 (−6.230)**		−0.64E−01 (−5.876)**		−0.88E−05 (−7.233)**
UR		−0.48E−01 (−4.958)**		−0.45E−01 (−5.097)**		−0.31E−01 (−3.470)**
NLINCOME	−0.20E−03 (−26.483)**		−0.23E−03 (−20.484)**		−0.17E−03 (−15.034)**	
OTINCOME		−0.69E−05 (−7.247)**		−0.66E−05 (−8.216)**		−0.85E−05 (−7.124)**
GUARANTEE	−0.41E−04 (−1.863)	−0.97E−04 (−4.870)**	−0.44E−04 (−2.165)**	−0.14E−03 (−7.106)**	−0.29E−04 (−1.412)**	−0.11E−03 (−5.925)**
CATHOLIC	0.54E−01 (0.789)		0.47E−01 (0.705)		0.50E−01 (0.746)	
ONEPARENT	−0.130 (−2.363)*		−0.116 (−2.149)		−0.84E−01 (−1.578)	
ρ[1]	−0.145 (−4.298)		−0.123 (−3.703)		−0.101 (−3.053)	
Log-Likelihood	−3812		−4006		−4024	
∂Pr(M=1) / ∂GUARANTEE[2]	−1.59E−05		−1.73E−05		−1.14E−05	
∂Pr(W=1) / ∂GUARANTEE[3]		−3.87E−05		−5.57E−05		−4.66E−05

Table 3. Continued

Variagle	Year							
	1984		1985		1986		1987	
	M	W	M	W	M	W	M	W
CONSTANT	-3.668 (-13.314)**	-2.301 (-8.953)**	-3.935 (-14.097)**	-2.366 (-9.167)**	-3.751 (-14.290)**	-1.960 (-8.093)**	-3.732 (-14.169)**	-1.790 (-7.586)**
AGE	0.221 (14.966)**	0.166 (12.378)**	0.235 (15.977)**	0.172 (13.123)**	0.223 (16.088)**	0.150 (12.394)**	0.223 (16.196)**	0.140 (11.653)**
AGESQ	-0.25E-02 (-13.492)**	-0.21E-02 (-12.453)**	-0.27E-02 (-14.463)**	-0.21E-02 (-13.180)**	-0.25E-02 (-14.658)**	-0.19E-02 (-12.329)**	-0.25E-02 (-14.796)**	-0.17E-02 (-11.506)**
CITYSIZE	-0.46E-06 (-7.146)**	0.12E-06 (1.197)**	-0.47E-06 (-7.359)**	0.11E-07 (-0.181)**	-0.42E-06 (-6.966)**	0.78E-07 (1.276)	-0.44E-06 (-7.454)**	0.11E-06 (1.914)
ED	0.325 (5.525)**	0.630 (11.050)**	0.290 (4.898)**	0.638 (11.256)**	0.202 (3.566)**	0.608 (11.260)**	0.201 (3.640)**	0.702 (13.265)**
BLACK	-0.763 (-13.484)**	-0.150 (-2.656)**	-0.795 (-14.203)**	-0.175 (-3.173)**	-0.68E-04 (-23.794)**	-0.138 (-2.662)**	-0.811 (-15.913)**	-0.190 (-3.751)**
KID		-0.80E-01 (-6.244)**		-0.81E-01 (-6.720)**		-0.84E-01 (-7.537)**		-0.70E-01 (-6.370)**
UR		-0.50E-01 (-5.481)**		-0.48E-01 (-4.960)**		-0.54E-01 (-5.813)**		-0.71E-01 (-6.744)**
NLINCOME	-0.37E-04 (-6.547)**		-0.17E-03 (-21.783)**		-0.68E-04 (-23.793)**		-0.12E-03 (-30.059)**	
OTINCOME		-0.50E-05 (-4.822)**		-0.52E-05 (-8.742)**		-0.33E-05 (-5.132)**		-0.62E-05 (-12.251)**
GUARANTEE	-0.60E-04 (-2.782)**	-0.13E-03 (-6.356)**	-0.45E-04 (-1.742)**	-0.14E-03 (-5.868)**	-0.26E-04 (-1.269)**	-0.14E-03 (-6.693)**	-0.39E-04 (-1.874)	-0.12E-03 (-6.128)**
CATHOLIC	0.124 (1.961)*		0.28E-01 (0.422)		0.69E-01 (1.084)**		0.104 (1.647)	
ONEPARENT	-0.100 (-1.847)		-0.82E-01 (-1.515)		-0.45E-01 (-0.926)		-0.19E-01 (0.402)	
ρ[1]	-0.058 (-1.705)		-0.064 (-1.915)		-0.058 (-1.857)		0.025 (0.823)	
Log-Likelihood	-4126		-4016		-4492		-4557	
∂Pr(M=1) /∂GUARANTEE[2]	-2.36E-05		-1.77E-05		-1.02E-05		-1.54E-05	
∂Pr(W=1) /∂GUARANTEE[3]		-5.24E-05		-5.59E-05		-5.50E-05		-4.92E-05

Education (ED) has a strong positive effect on the probability of marriage. Women with 12 years or more education are more likely to marry than women with less education. The marriage equation also shows that a woman's probability of marriage is lower among blacks. The exogenous nonlabor income (NLINCOME) is significantly negative on the probability of marriage. The coefficient for exogenous nonlabor income suggests that women with higher nonlabor income are less likely to marry.

The coefficient on the AFDC guarantee (GUARANTEE) is strongly significant throughout the sample period. The negative coefficient in the marriage probit model implies that a woman is less likely to marry as the AFDC guaranteed amount increases. Two dummy variables that represent cultural factors are included in the marriage equation. The first one (ONEPARENT) is a variable showing whether the individual lived with both parents while growing up. The second one (CATHOLIC) is a variable indicating religious preference whether Roman Catholic or not. The variable ONEPARENT has a negative effect on the probability of marriage. The negative coefficient of ONEPARENT in the marriage probit model implies that a woman is more likely to remain unmarried when she lived with only one parent while growing up. The variable CATHOLIC has the expected positive sign, but this coefficient is not significant.

Table 3 also presents the correlation coefficients between marriage and work within the bivariate probit model of marriage and work equations. For the entire sample period, the correlation coefficient is negative except for the year 1987. However, the correlation coefficient becomes smaller, revealing that the correlation between marriage and work becomes weaker. The coefficient on the AFDC guarantee

(GUARANTEE) indicates that a $1000 increase in the AFDC guarantee, for example, in 1980, will lead to a 0.030 decrease in the probability of marriage. This result shows that the AFDC program designed to help alleviate poverty discourages marriage and increases the number of unmarried women, thereby actually worsening poverty.

B. Work Equation

Table 3 presents parameter estimates from the bivariate probit model of work. Age (AGE) and age squared (AGESQ) have significant impacts on the probability of work. The coefficients for age and age squared suggest that age has at first a positive and then a negative effect on the probability of work. Living in a large city leads to an increase in the probability of work.

Education (ED) has a strong positive effect on the probability of work. Women with 12 years or more education are more likely to work than women with less education. The work equation also shows that the probability of work increases with fewer children (KID).

From 1975 to 1980, the coefficient on the race dummy variable (BLACK) has an unexpected positive though insignificant effect on the probability of work. However, from 1981 to 1987, the coefficient on the race dummy variable has the expected negative effect on the probability of work. The negative coefficient on the BLACK variable after 1980 could be a result of work disincentive effects generated by the AFDC program. The work equation shows that the probability of work increases with lower unemployment rates (UR) and less family income (OTINCOME). These demographic correlates of work are the same as those found in many previous female labor supply studies.

The AFDC guarantee (GUARANTEE) has a strong negative effect on the probability of work. The probit estimates of work show that a woman is more likely to choose not to work with the higher welfare guarantee. The coefficient on the AFDC guarantee (GUARANTEE) indicates that a $1000 increase in the AFDC guarantee, for example, in 1980, will lead to a 0.042 decrease in the probability of work. This result shows that the AFDC benefits designed to help alleviate poverty discourages work, worsening poverty.

C. AFDC Participation Equation

Table 4 presents parameter estimates from the univariate probit model of AFDC participation among the AFDC eligible sample. The variables age (AGE) and age squared (AGESQ) have a strong effect on the probability of AFDC participation. The coefficients for age and age squared suggest that age has at first a positive and then a negative effect on the probability of AFDC participation. In the probit model, education (ED) has a negative effect on the probability of AFDC participation, but the effect is not significant.

The race dummy variable (BLACK) has the expected positive effect on the probability of AFDC participation. The positive coefficient on the AFDC benefits (GUARANTEE) in the probit model implies that a woman who is eligible for the AFDC benefits is more likely to apply for AFDC program with the higher AFDC guarantee. NLINCOME has a negative effect on the probability of AFDC participation. Women with nonlabor income are less likely to participate in AFDC than women with no nonlabor income.

Table 4. Univariate Probit Estimates of the Probability of AFDC Participation Among the AFDC Eligible Sample, P(A=1)

Variable	Year			
	1975	1976	1977	1978
CONSTANT	-4.609 (-5.390)**	-3.840 (-5.022)	-3.935 (-4.957)**	-3.029 (-3.963)**
AGE	0.216 (4.423)**	0.192 (4.524)**	0.204 (4.311)**	0.191 (4.148)**
AGESQ	-0.32E-02 (-4.900)**	-0.29E-02 (-5.046)**	-0.31E-02 (-4.793)**	-0.30E-02 (-4.879)**
ED	0.55E-01 (0.353)	-0.92E-01 (-0.640)	0.82E-02 (0.054)	0.40E-01 (0.266)
BLACK	0.655 (3.561)	0.737 (4.322)	0.559 (2.965)**	0.621 (3.652)**
GUARANTEE	0.21E-03 (3.391)**	0.10E-03 (1.766)	0.10E-03 (1.869)	0.18E-04 (0.305)
NLINCOME	0.22E-03 (-2.522)*	-0.24E-03 (-1.919)	-0.20E-03 (-2.067)*	-0.30E-03 (-2.974)**
Log-Likelihood	-218.4	-212.8	-183.8	-189.8
Chi-Squared	80.9	91.0	77.0	112.2
Variable	1979	1980	1981	1982
CONSTANT	-6.279 (-10.962)**	-6.827 (-12.007)**	-6.291 (-11.992)**	-6.207 (-11.543)**
AGE	0.341 (9.465)**	0.345 (9.686)**	0.306 (9.432)**	0.315 (9.371)**
AGESQ	-0.48E-02 (-9.379)**	-048E-02 (-9.497)**	-0.41E-02 (-9.243)**	-0.43E-02 (-9.193)**
ED	0.63E-01 (0.495)	-0.117 (-0.955)	0.62E-01 (0.521)	-0.77E-01 (-0.655)
BLACK	0.491 (3.388)**	0.451 (3.227)**	0.620 (4.294)**	0.438 (3.153)**
GUARANTEE	0.72E-04 (1.582)	0.20E-03 (4.736)**	0.15E-03 (3.482)**	0.15E-03 (3.310)**
NLINCOME	-0.25E-03 (-2.259)*	-0.15E-03 (-1.620)	-0.30E-03 (-2.216)*	0.21E-0.3 (-2.151)*
Log-Likelihood	-261.1	-277.8	-293.8	-306.8
Chi-Squared	153.6	170.7	169.2	144.7

Notes: t-ratios are in parentheses

* Significant at the 5% level, ** Significant at the 1% level

Table 4. Continued

Variable	Year				
	1983	1984	1985	1986	1987
CONSTANT	-6.716	-6.425	-6.208	-6.710	-6.560
	(-11.611)**	(-11.861)**	(-11.319)**	(-12.553)**	(-12.535)**
AGE	0.352	0.336	0.319	0.359	0.365
	(10.136)**	(10.569)**	(9.983)**	(11.261)**	(11.552)**
AGESQ	-0.48E-02	-0.45E-02	-0.43E-02	-0.48E-02	-0.50E-02
	(-9.843)**	(-10.276)**	(-9.779)**	(-10.994)**	(-11.350)**
ED	-0.103	-0.197	-0.146	-0.417	0.285
	(-0.856)	(-1.697)	(-1.244)	(-3.552)**	(-2.436)*
BLACK	0.474	0.412	0.526	0.428	0.375
	(3.281)**	(2.904)**	(3.574)**	(3.171)**	(2.771)**
GUARANTEE	0.11E-03	0.87E-04	0.68E-04	0.95E-04	0.16E-04
	(2.222)*	(1.709)	(1.052)	(1.940)	(0.326)
NLINCOME	0.22E-03	-0.17E-03	-0.12E-03	-0.37E-03	-0.13E-03
	(-1.809)	(-1.819)	(-1.257)*	(-2.226)*	(-1.867)
Log-Likelihood	-290.8	-314.1	-304.4	-315.3	-320.0
Chi-Squared	151.5	158.5	154.7	200.0	200.6

D. AFDC Recipiency Probability

Given the estimates of marriage, work, and AFDC participation, we can predict the probability of AFDC recipiency according to the estimation procedures in Section II. Table 5 and Table 6 report the estimated probability of AFDC recipiency between 1975 and 1987 evaluated at the average sample characteristics of each year.

Table 5 shows the estimated probability of AFDC recipiency that is decomposed as the probability of not being married, the probability of not working conditional on not being married and the probability of AFDC participation. Table 6 reports the estimated probability of AFDC recipiency that is decomposed as the probability of not working, the probability of not being married conditional on not work and the probability of AFDC participation. Tables 5 and 6 show that the estimated probability of AFDC recipiency has been steady during the sample period. There is a discrepancy between the estimated probability of AFDC recipiency and actual AFDC recipiency rate since we use the average sample characteristics to estimate the probability of AFDC recipiency.

Table 5. Estimated Probability of AFDC Recipiency Between 1975 and 1987 (evaluated at the average sample characteristics of each year): P^(AFDC=1) = P^(M=0) × P^(W=0 | M=0) × P^(A=1)

Year (Sample Size)	P^(AFDC=1) (Actual %)	P^(M=0)	P^(W=0 | M=0)	P^(A=1)
1975	0.037	0.234	0.467	0.340
(2,730)	(0.049)	(0.261)	(0.450)	(0.420)
1976	0.034	0.262	0.477	0.276
(2,944)	(0.049)	(0.287)	(0.461)	(0.373)
1977	0.036	0.264	0.426	0.325
(2,688)	(0.047)	(0.291)	(0.426)	(0.383)
1978	0.040	0.269	0.405	0.369
(2,878)	(0.053)	(0.292)	(0.428)	(0.423)
1979	0.045	0.344	0.433	0.303
(3,233)	(0.050)	(0.365)	(0.472)	(0.293)
1980	0.037	0.363	0.409	0.252
(3,566)	(0.045)	(0.382)	(0.471)	(0.251)
1981	0.044	0.402	0.437	0.250
(3,294)	(0.051)	(0.414)	(0.485)	(0.257)
1982	0.043	0.401	0.417	0.260
(3,460)	(0.049)	(0.413)	(0.468)	(0.254)
1983	0.042	0.407	0.410	0.252
(3,447)	(0.046)	(0.418)	(0.457)	(0.243)
1984	0.043	0.415	0.412	0.256
(3,587)	(0.048)	(0.420)	(0.468)	(0.244)
1985	0.040	0.419	0.392	0.244
(3,518)	(0.047)	(0.427)	(0.455)	(0.244)
1986	0.036	0.427	0.387	0.219
(3,850)	(0.047)	(0.433)	(0.446)	(0.245)
1987	0.040	0.431	0.389	0.239
(3,992)	(0.046)	(0.436)	(0.433)	(0.245)

Table 6. Estimated Probability of AFDC Recipiency Between 1975 and 1987 (evaluated at the average sample characteristics of each year) P^(AFDC=1) = P^(W=0) × P^(M=0 | W=0) × P^(A=1)

Year (Sample Size)	P^(AFDC=1) (Actual %)	P^(W=0)	P^(M=0 | W=0)	P^(A=1)
1975	0.037	0.575	0.190	0.340
(2,730)	(0.049)	(0.570)	(0.206)	(0.420)
1976	0.034	0.568	0.219	0.276
(2,944)	(0.049)	(0.554)	(0.235)	(0.373)
1977	0.036	0.526	0.214	0.325
(2,688)	(0.047)	(0.524)	(0.236)	(0.383)
1978	0.040	0.508	0.215	0.369
(2,878)	(0.053)	(0.507)	(0.247)	(0.423)
1979	0.045	0.502	0.297	0.303
(3,233)	(0.050)	(0.501)	(0.344)	(0.293)
1980	0.037	0.485	0.306	0.252
(3,566)	(0.045)	(0.484)	(0.373)	(0.251)
1981	0.044	0.493	0.357	0.250
(3,294)	(0.051)	(0.490)	(0.410)	(0.257)
1982	0.043	0.465	0.360	0.260
(3,460)	(0.049)	(0.465)	(0.415)	(0.254)
1983	0.042	0.449	0.372	0.252
(3,447)	(0.046)	(0.449)	(0.425)	(0.243)
1984	0.043	0.434	0.394	0.256
(3,587)	(0.048)	(0.435)	(0.452)	(0.244)
1985	0.040	0.415	0.396	0.244
(3,518)	(0.047)	(0.418)	(0.465)	(0.244)
1986	0.036	0.408	0.406	0.219
(3,850)	(0.047)	(0.412)	(0.469)	(0.245)
1987	0.040	0.380	0.441	0.239
(3,992)	(0.046)	(0.386)	(0.489)	(0.245)

2. Welfare Policy Simulations

The probit estimates are used to impute the effects of change in welfare policy on the probabilities of marriage, work, and AFDC participation. Table 7 and Table 8 report simulations of the effects of change in welfare policy on decisions of marriage, work, and AFDC participation.

Table 7. Illustrative Effects of Welfare Policy on the Probability of AFDC Recipiency (AFDC benefits down 10%): P^(AFDC=1) = P^(M=0) × P^(W=0 | M=0) × P^(A=1)

Year		P^(AFDC=1)	P^(M=0)	P^(W=0 | M=0)	P^(A=1)
1975	GUARANTEE	0.037	0.234	0.467	0.340
	GUARANTEE*	0.031	0.228	0.443	0.306
1976	GUARANTEE	0.034	0.262	0.477	0.276
	GUARANTEE*	0.030	0.251	0.457	0.261
1977	GUARANTEE	0.036	0.264	0.426	0.325
	GUARANTEE*	0.032	0.255	0.406	0.310
1978	GUARANTEE	0.040	0.269	0.405	0.369
	GUARANTEE*	0.036	0.259	0.385	0.367
1979	GUARANTEE	0.045	0.344	0.433	0.303
	GUARANTEE*	0.040	0.332	0.413	0.294
1980	GUARANTEE	0.037	0.363	0.409	0.252
	GUARANTEE*	0.032	0.353	0.395	0.231
1981	GUARANTEE	0.044	0.402	0.437	0.250
	GUARANTEE*	0.039	0.397	0.424	0.235
1982	GUARANTEE	0.043	0.401	0.417	0.260
	GUARANTEE*	0.039	0.396	0.401	0.246
1983	GUARANTEE	0.042	0.407	0.410	0.252
	GUARANTEE*	0.039	0.404	0.397	0.243
1984	GUARANTEE	0.043	0.415	0.412	0.256
	GUARANTEE*	0.040	0.408	0.397	0.248
1985	GUARANTEE	0.040	0.419	0.392	0.244
	GUARANTEE*	0.037	0.415	0.377	0.238
1986	GUARANTEE	0.036	0.427	0.387	0.219
	GUARANTEE*	0.033	0.424	0.372	0.211
1987	GUARANTEE	0.040	0.431	0.389	0.239
	GUARANTEE*	0.038	0.427	0.376	0.238

Note: GUARANTEE = Maximum guaranteed amount of AFDC cash benefits by the state
GUARANTEE* = GUARANTEE × 0.9

Table 8. Illustrative Effects of Welfare Policy on the Probability of AFDC Recipiency (AFDC benefits down 10%):
P^(AFDC=1) = P^(W=0) × P^(W=0 | M=0) × P^(A=1)

Year		P^(AFDC=1)	P^(W=0)	P^(M=0 | W=0)	P^(A=1)
1975	GUARANTEE	0.037	0.575	0.190	0.340
	GUARANTEE*	0.031	0.553	0.183	0.306
1976	GUARANTEE	0.034	0.568	0.219	0.276
	GUARANTEE*	0.030	0.551	0.208	0.261
1977	GUARANTEE	0.036	0.526	0.214	0.325
	GUARANTEE*	0.032	0.508	0.204	0.310
1978	GUARANTEE	0.040	0.508	0.215	0.369
	GUARANTEE*	0.036	0.490	0.204	0.367
1979	GUARANTEE	0.045	0.502	0.297	0.303
	GUARANTEE*	0.040	0.484	0.284	0.294
1980	GUARANTEE	0.037	0.485	0.306	0.252
	GUARANTEE*	0.032	0.471	0.296	0.231
1981	GUARANTEE	0.044	0.493	0.357	0.250
	GUARANTEE*	0.039	0.481	0.351	0.235
1982	GUARANTEE	0.043	0.465	0.360	0.260
	GUARANTEE*	0.039	0.449	0.354	0.246
1983	GUARANTEE	0.042	0.449	0.372	0.252
	GUARANTEE*	0.039	0.436	0.368	0.243
1984	GUARANTEE	0.043	0.434	0.394	0.256
	GUARANTEE*	0.040	0.419	0.387	0.248
1985	GUARANTEE	0.040	0.415	0.396	0.244
	GUARANTEE*	0.037	0.400	0.391	0.238
1986	GUARANTEE	0.036	0.408	0.406	0.219
	GUARANTEE*	0.033	0.393	0.402	0.211
1987	GUARANTEE	0.040	0.380	0.441	0.239
	GUARANTEE*	0.038	0.367	0.437	0.238

Note: GUARANTEE = Maximum guaranteed amount of AFDC cash benefits by the state
GUARANTEE* = GUARANTEE × 0.9

Our empirical results show that lowering the AFDC benefits lowers the likelihood of AFDC recipiency throughout the sample period since it increases the probabilities of marriage and work and decreases the probability of AFDC participation. In 1975, lowering the AFDC benefits by 10 percent lowered the likelihood of AFDC recipiency from 0.037 to 0.031. The likelihood of AFDC participation would be 0.034 lower if the AFDC benefits were lowered by 10 percent. Lowering the AFDC benefits by 10 percent decreased the probability of not being married and the probability of not working conditional on not being married by 0.006 and 0.024 respectively. Lowering the AFDC benefits by 10 percent also decreased the probability of not working and the probability of not being married conditional on not working by 0.022 and 0.007 respectively.

However, in 1987, lowering the AFDC benefits by 10 percent lowered only 0.002 the likelihood of AFDC recipiency. In 1987, lowering the AFDC benefits by 10 percent lowered the probability of not being married by 0.004. The probability of not working conditional on not being married decreased 0.013 by lowering 10 percent of AFDC benefits in 1987. Also, in 1987, lowering the AFDC benefits by 10 percent decreased the probability of not working and the probability of not being married conditional on not working by 0.013 and 0.004 respectively. Lowering the AFDC benefits by 10 percent lowered only 0.001 the probability of AFDC participation in 1987. Based on the results of welfare policy simulations, the change in welfare policy affects the probabilities of marriage, work, and AFDC participation and consequently the probability of AFDC recipiency.

Ⅳ. Conclusions

After the United States declared War on Poverty in the 1960s, the poverty rate declined from 22.2 percent in 1960 to 12.1 percent in 1969, remained between 11 and 13 percent for entire 1970s, and then increased during the 1980s and early 1990s. In 1993, the poverty rate was 15.1 percent. The failure of the poverty rate to decline during the 1970s and its subsequent rise in the 1980s and early 1990s was mostly due to the growth of poor female-headed families.

Female-headed families constitute the prime eligibility group for welfare programs, especially AFDC (Garfinkel and McLanahan, 1986). With the rising illegitimate birth rate and the high rate of divorce, the size of the female-headed population is expected to grow, increasing the incidence of welfare dependence.

A female who is not married and does not work is observed in one of three alternative states: she can receive AFDC benefits, she can live independently with other income, or she can live as a dependent. If she does not have a non-AFDC (private or family) support network, she must depend on public support: AFDC benefits. There are two routes to self-sufficiency for a female on welfare: work or marriage. This paper analyzes a woman's probability of being on welfare, decomposing it into the probability of work (workability) and the probability of getting married (marriageability). The empirical results show the strong association of the welfare policy with decisions to marry and work, and consequently with the likelihood of AFDC recipiency. The simulation results show that lowering welfare benefits decreases the likelihood of AFDC recipiency since lowering welfare benefits increases the probabilities of marriage and work and decreases the probability of AFDC participation among the AFDC eligible population.

The findings of this paper support the hypothesis that economic incentives influence not only work behavior but also marital behavior. Our empirical results suggest that economic incentives created by public welfare policy influence marital and work decisions, and, as a result, the incidence of welfare dependence. Specifically, higher AFDC benefits significantly reduce the probabilities of both marriage and work and thus raise the probability of AFDC recipiency. If welfare benefits are substantially reduced, more women potentially eligible for the welfare program would marry and/or find employment, thus getting off welfare dependency.

In 1996, U.S. Congress passed a new welfare bill which eliminates the federal guarantee of cash assistance for poor children (AFDC). Instead it provides states with a fixed amount of federal money to run their new AFDC programs, TANF (Temporary Assistance for Needy Families Programs). According to TANF, the head of every family on welfare would have to work within two years, or the family would lose benefits. Lifetime welfare benefits would be limited to five years. The latest welfare reform by U.S. Congress moves in the right direction to improve the effectiveness of the welfare program; however, a more drastic welfare reform, focusing on the individual's incentive mechanism of marriage and work, is in order for the future. Welfare reform needs to strengthen the family or private support network utilizing private charity organizations and self-help at the local community level.

References

Barr, Nicholas and Robert Hall, "The Probability of Dependence on

Public Assistance", *Economica*, 48, 1981, pp.109~124.

Becker, Gary, "A Theory of Marriage: Part I", *Journal of Political Economy*, 80, 1973, pp.813~846.

___________, "A Theory of Marriage: Part II", *Journal of Political Economy*, 82, 1973, s11~s26.

___________, *A Treatise on the Family*, Cambridge: Harvard University Press, 1981.

Ben-Porath, Yoram. "Economics and the Family-Match or Mismatch? A Review of Becker's A Treatise on the Family", *Journal of Economic Literature*, 20, 1982, pp.52~72.

Blank, Rebecca, "The Effect of Medical Need and Medicaid on AFDC Participation", *Journal of Human Resources*, 24, 1989a, pp.54~87.

_____________, "Analyzing the Length of Welfare Spells", *Journal of Public Economics*, 39, 1989b, pp.245~273.

Danziger, Sheldon, Robert Haveman, and Robert Plotnick, "How Income Transfers Affect Work, Savings and the Income Distribution", *Journal of Economic Literature*, 19, 1981, pp.975~1028.

Duncan, Greg and Saul Hoffman, "Welfare Benefits, Economic Opportunities, and Out-of-Wedlock Births Among Black Teenage Girls", *Demography*, 27, 1990, pp.519~535.

Ellwood, David, *Targeting 'Would Be' Long-Term Recipients of AFDC*, Princeton, NJ: Mathematical Policy Research, 1986.

Ellwood, D., and M. Bane, "The Impact of AFDC on Family Structure and Living Arrangements", *Research in Labor Economics*, ed., R. Ehrenberg Greenwich, CT: JAI Press 1985, pp.137~207.

Fitzgerald, John, "Welfare Durations and the Marriage Market", *Journal of Human Resources*, 26, 1991, pp.545~561.

Freiden, Alan, "The United States Marriage Market", *Journal of Political Economy*, 82, 1974, s34~s53.

Freund, J. and R. Walpole, *Mathematical Statistics*, New Jersey: Prentice-Hall, 1987.

Garfinkel, I. and S. McLanahan, *Single Mothers and Their Children: A New American Dilemma*, Washington, DC: Urban Inst., 1986.

Henson, Mary, *Trends in Income of Families and Persons in the United States: 1947 to 1960*, U.S. Bureau of Census, Technical Paper No.17, Washington: GPO, 1967.

Hoffman, Saul and Greg Duncan, "Multinominal and Conditional Logit Discrete-Choice Models in Demography", *Demography*, 25, 1988, pp.415~427.

Hutchens, Robert, "Welfare, Remarriage, and Marital Search", *American Economic Review*, 69, 1979, pp.369~379.

________, "Entry and Exit Transitions in a Government Transfer Program: The Case of Aid to Families with Dependent Children", *Journal of Human Resources*, 16, 1981, pp.217~237.

Knott, Joseph, "The Index of Income Concentration in the 1970 Census of Population and Housing", *Proceding of the American Statistical Association*, 1971, pp.318~323.

Lundberg, Shelly and Robert Plotnick, "Adolescent Premarital Childbearing: Do Economic Incentives Matter?", *Journal of Labor Economics*, 13, 1995, pp.177~200.

Maddala, G. S., *Limited-Dependent and Qualitative Variables in Economics*, New York: Cambridge University Press, 1983.

Mincer, Jacob, "Market Prices, Opportunity Costs, and Income Effects", In Carl Crist, et al.(eds.), *Measurement in Economics: Studies in Mathematical Economics and Econometrics in Memory of Yehuda Grunfeld*, Stanford: Stanford University Press, 1963.

Moffitt, Robert, “An Economic Model of Welfare Stigma”, *American Economic Review*, 73, 1983, pp.1023~1035.

_____________, “Work Incentives in the AFDC System: An Analysis of the 1981 Reforms”, *American Economic Review*, 76, 1986, pp.219~223.

Morimune, Kimio, Comparisons of Normal and Logistic Models in The Bivariate Dichotomous Analsis″, *Econometrica*, 47, 1979, pp.957~975.

O′Neill, June, Laurie Bassi and Douglas Wolf, “The Duration of Welfare Spells”, *Review of Economics and Statistics*, 69, 1987, pp.241~248.

Plotnick, Robert, “Turnover in the AFDC Population: An Event History Analysis”, *Journal of Human Resources*, 18, 1983, pp.65~81.

Robins, Phillp, “Child Support, Welfare Dependency, and Poverty”, *American Economic Review*, 76, 1986, pp.768~788.

Schmidt, Peter and Robert P. Strauss, “Estimation of Models with Jointly Dependent Qualitative Variables: A Simultaneous Logit Approach”, *Econometrica*, 43, 1975, pp.745~755.

U.S. Bureau of the Census, *Statistical Abstract of the United States: 1991*, Washington, DC, 1992.

________________________, *Statistical Abstract of the United States: 1995*, Washington, DC, 1996.

Summary

女性의 公共扶助 依存에 관한 研究

洪 碩 杓

여성이 공공부조 프로그램의 의존에서 벗어나기 위해서는 결혼을 하든지 또는 취업을 하여야 한다. 본 연구에서는 여성이 공공부조에 의존할 확률을 세분해서, 결혼을 할 확률과 취업을 할 확률로 나누어 분석하였다. 여성이 결혼과 취업을 하는 결정과정은 각 여성이 예상하는 경제적인 편익(benefits)과 비용(costs)에 의해 영향을 받는다. 여성이 결혼을 안하고 취업을 안하는 데서 오는 경제적 편익은 공공부조 지급액이다. 여성이 배우자 없이 자녀를 가지는 비용보다 공공부조 지급액이 크다고 예상하면, 자녀를 가지고 공공부조 지급을 받는 것을 선택할 수 있다.

본 연구에서 사용된 데이터는 기존의 공공부조 의존에 관한 연구에서 데이터로 사용된 자녀를 가진 편모뿐 아니라 16세 이상 60세 이하의 모든 여성을 포함시켰다. 그 이유는 여성의 결혼, 취업, 그리고 자녀를 갖는 결정은 경제적인 편익과 비용에 의해 영향을 받기 때문이다. 본 연구에서는 미국연방정부의 공공부조정책(public welfare policy)에 의해 만들어진 경제적 편익과 비용이 여성의 결혼과 취업결정에 어떠한 영향을 주는지 Probit 모델을 사용하여 분석하였다. 이를 위해 1975년부터 1987년까지 Michigan Panel Study of Income Dynamics 데이터를 사용하였다.

분석결과 공공부조정책과 여성의 결혼과 취업결정, 그리고 공공부조에 의존할 가능성간에 큰 연관성이 있음이 밝혀졌다. 즉, 공공부조 지급액이 공공부조를 받을 가능성이 있는 여성의 취업할 확률과 결혼할 확률에 영향을 주어, 결과적으로 공공부조에 의존할 가능성에 변화를 주는 것이다. 그러므로 공공부조 프로그램의 근본적인 개혁은 개인의 결혼과 취업의 동기(incentive) 메커니즘에 초점을 맞추는 것이어야 한다.