Labor Force Participation and the Extension of Medicaid by the Forthcoming Affordable Care Act of 2010

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Abstract

This paper investigates the impact of Medicaid eligibility expansion set forth in the Patient Protection and Affordable Care Act of 2010. The extension of Medicaid eligibility to 133% of the Federal Poverty level nationwide will impact labor force participation and welfare participation decisions of single mothers with dependent children. Following from existing literature, this paper uses a simple probit model to analyze the probability changes of labor force and welfare participation as well as identify which characteristics contribute most to these decisions. Mixed results suggest that the eligibility expansion will reduce welfare participation decisions for single white mother by 1.14%.

Objectives

Given the current political climate and the status of the Patient Protection and Affordable Care Act of 2010 there is an abundance of discussion about the act, but a lack of econometric analysis to reveal how the expansion of Medicaid eligibility will impact labor force participation and welfare participation.

Data

The data are gathered from the nationally representative Consumer Population Survey (CPS). Personal level data for the March of 2011 survey are used specifically for its inclusion of labor force participation and welfare participation variables. This sample contains 4,501 single mothers as head of household between the ages of 18-55 with at least 1 child under 18 years of age present. For this sample, single is represented in the data as separated, divorced, or never married, which is consistent with the literature.

Variable Statistics

Variable	Definition
NCHILD	Number of own children in household
NCHLT5	Number of children under age 5 in household
YNGCH	Age of youngest own child in household
AGE	Age of mother
AGE2	Age squared divided by 100
FAMSIZE	Number of family members in household
LABFORCE	=1 if in the labor force, 0 otherwise
SEPRTD	=1 if marital status is "separated", 0 if never married
DIVRCD	=1 if marital status is "divorced", 0 if never married
BLACK	=1 if Black, 0 otherwise
HISPANC	=1 if Hispanic, 0 otherwise
WHITE	=1 if White, 0 otherwise
WELFR	=1 if received welfare income last year, 0 otherwise

	100% FPL	100-133% FPL
Counts		
OBS	3697	804
# in Labor force (%)	2251 (60.89)	726 (90.3)
# on Welfare (%)	530 (14.34)	44 (5.47)
SEPRTD (%)	535 (14.47)	107 (13.31)
DIVRCD (%)	931 (25.18)	312 (38.81)
BLACK (%)	946 (25.59)	204 (25.37)
HISPANC (%)	1046 (28.29)	186 (23.13)
WHITE (%)	1550 (41.93)	382 (47.51)
Means		
NCHILD	1.99	1.89
NCHLT5	0.61	0.37
YNGCH	6.10	8.10
AGE	32.38	35.53
AGE2	11.25	13.33
EUDC	71.84	77.68
FAMSIZE	3.84	3.33

Methods

Let $U_{ij} = V_{ij} + \varepsilon_{ij}$ be the utility gained by agent *i* by joining the labor force, and $U_{ik} = V_{ik} + \varepsilon_{ik}$ be the utility gained by agent *i* by not joining the labor force, where $V_{ij} = X_{ij}^{'}\beta$ and $V_{ik} = X_{ik}^{'}\beta$. Also, Let Y_i equal 1 if agent *i* joins the labor force and 0 otherwise. The probability of agent i choosing alternative j is

$$\begin{aligned} P[Y_i = 1|X] &= P[U_{ij} > U_{ik}] \\ &= P\left[X_{ij}^{'}\beta + \varepsilon_{ij} - X_{ik}^{'}\beta - \varepsilon_{ik} > 0|X\right] \\ &= P\left[(\varepsilon_{ik} - \varepsilon_{ij}) \leq (X_{ij}^{'} - X_{ik}^{'})\,\beta\right] \\ &= P_{ij} = \Phi\left[(X_{ij} - X_{ik})\beta\right] \end{aligned}$$

Where $\varepsilon_{ik}, \varepsilon_{ij}$ are assumed to be normally distributed, X_{ij} is a vector of covariates, and β is a vector of parameters which explain how the covariates impact the probability. The resulting log-likelihood function given the sample data, S_n, is

$$lnL(\beta|S_n) = \sum_{i=1}^{n}\left[Y_i \ln P_{ij} + (1 - Y_i)\ln\left(1 - P_{ij}\right)\right]$$

This log-likelihood function is maximized conditional on the sample data. It is import to note that the parameter estimates which result from this maximization are not inherently interpretable, thus, marginal effects must be calculated in order to make inference.

Marginal Effects

The marginal effects are calculated at the means of independent continuous variables, by

$$ME_j = N^{-1}\sum_{i=1}^{n} F^{'}(X_{ij}^{'}\hat{\beta})\hat{\beta_j}$$

where $F^{'}(z) = \frac{\partial F(z)}{\partial z}$. This is done because a simple calculation of the marginal effects will differ with each point of evaluation. Although it is equally permissible to evaluate the marginal effects at every observation and use the average of the individual marginal effects, the former calculation for marginal effects is used for this model. The calculation of marginal effects for independent binary variables is

$$ME = P[Y_i = 1|\bar{x}_d, d = 1] - P[Y_i = 1|\bar{x}_d, d = 0]$$

where $\bar{x}_d$, denotes the means of all other variables in the model . With the marginal effects of both continuous and binary independent variables, inference can be drawn from the sample data.

Results

To be consistent with the literature, 6 continuous independent variables, and 5 dummy variables were regressed on the two dependent variables. The independent variables include: age, age-squared, education, number of children, age of youngest child, and number of children under 5, and the binary dummy variables include divorced, separated, Black, Hispanic and White. Probit estimates are obtained by maximizing the likelihood functions, results are

	100% FPL		133% FPL	
	LFP	WELFR	LFP	WELFR
(Intercept)	-0.2640 (0.3349)	-1.1629 (0.4212)**	0.2453 (1.2175)	-3.1170 (1.5632)*
AGE	0.0181 (0.0193)	0.0335 (0.0249)	0.0325 (0.0644)	0.0819 (0.0829)
AGE2	-0.0367 (0.0270)	-0.0574 (0.0355)	-0.0586 (0.0841)	-0.0968 (0.1097)
NCHILD	-0.0030 (0.0224)	0.0799 (0.0266)**	0.1299 (0.0775).	-0.0686 (0.0903)
YNGCH	0.0053 (0.0076)	-0.0077 (0.0096)	0.0053 (0.0223)	-0.0004 (0.0265)
NCHLT5	-0.0939 (0.0457)*	0.0691 (0.0540)	-0.1040 (0.1701)	0.5128 (0.1904)**
EDUC	0.0058 (0.0011)***	-0.0060 (0.0014)***	0.0040 (0.0037)	-0.0062 (0.0045)
SEPRTD	0.1780 (0.0655)**	-0.0431 (0.0790)	-0.0151 (0.1996)	0.6616 (0.2121)**
DIVRCD	0.1540 (0.0575)**	-0.2131 (0.0746)**	-0.0782 (0.1534)	0.3236 (0.1955).
BLACK	-0.0152 (0.0718)	0.1299 (0.0868)	-0.0866 (0.2162)	0.2221 (0.2498)
HISPANC	-0.0036 (0.0720)	-0.1023 (0.0886)	0.29534 (0.2269)	0.0262 (0.2547)
WHITE	-0.1690 (0.0688)*	-0.1201 (0.0852)	0.2914 (0.2073)	-0.1163 (0.2392)

*** Significant at 0.001 ** Significant at 0.01 * Significant at 0.05 . Significant at 0.1

Due to the non-linear nature of the probit model, these estimates are not inherently interpreted, therefore marginal effects must be found. The marginal effects are calculated at the means of independent variables.

	100% FPL		133% FPL	
	LFP	WELFR	LFP	WELFR
(Intercept)	-0.1013 (0.1285)	-0.2521 (0.0911)**	0.0404 (0.2008)	-0.2940 (0.1481)*
AGE	0.0069 (0.0074)	0.0073 (0.0054)	0.0054 (0.0106)	0.0077 (0.0078)
AGE2	-0.0141 (0.0104)	-0.0124 (0.0077)	-0.0100 (0.0139)	-0.0091 (0.0103)
NCHILD	-0.0011 (0.0086)	0.0173 (0.0058)**	0.0214 (0.0127).	-0.0065 (0.0085)
YNGCH	0.0020 (0.0029)	-0.0017 (0.0021)	0.0009 (0.0037)	-0.0000 (0.0025)
NCHLT5	-0.0360 (0.0175)*	0.0150 (0.0117)	-0.0171 (0.0280)	0.0484 (0.0178)**
EDUC	0.0022 (0.0004)***	-0.0013 (0.0003)***	0.0007 (0.0006)	-0.0006 (0.0004)
SEPRTD	0.0683 (0.0251)**	-0.0094 (0.0171)	-0.0025 (0.0329)	0.0624 (0.0198)**
DIVRCD	0.0583 (0.0215)**	-0.0435 (0.0143)**	-0.0131 (0.0259)	0.0327 (0.0209)
BLACK	-0.0058 (0.0276)	0.0291 (0.0201)	-0.0147 (0.0377)	0.0230 (0.0283)
HISPANC	-0.0014 (0.0276)	-0.0222 (0.0192)	0.0438 (0.0301)	0.0025 (0.0246)
WHITE	-0.0650 (0.0265)*	-0.0258 (0.0181)	0.0480 (0.0340)	-0.0101 (0.0225)

*** Significant at 0.001 ** Significant at 0.01 * Significant at 0.05 . Significant at 0.1

Conclusions

Results for labor force participation ultimately proved to be insignificant. However, the data shows that the extension of Medicare eligibility coverage will reduce the likelihood of welfare participation for single white mothers by 1.14%. Although other results are mixed and inconclusive, the strongest result of this analysis is that the expansion of Medicaid eligibility does not indicate an increase in welfare participation, or a decrease in labor force participation. Further and more in-depth analysis should and will be continued on this issue as the Patient Protection and Affordable Care Act of 2010 is implemented over the coming years.

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