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The problem of rising health care costs and the related increased dependency on health insurance coverage has moved to the forefront of the US policy agenda in recent years, and was a fundamental component of President Clinton's 1992 campaign platform. However, the President's 1994 health care reform proposal was unsuccessful, and current G.O.P proposals to cut the rate of growth of Medicare and Medicaid spending while the eligible population and costs both continue to grow fails to address the problem of coverage. In fact, one likely side-effect of the cost-shifting to private insurance carriers will be to increase the ranks of the uninsured. This paper addresses one aspect of the coverage problem: specifically, how do the competing interests of public and private coverage for single mothers affect these mothers' willingness to participate in the labor market? And, how might restrictions concerning welfare eligibility currently undergoing legislative debate enter into the equation?

I. *The Links Between Health Insurance Coverage, Employment, and Policy Reform*

The significant increases in health care costs during the 1980's, accompanied by the decline of relative earnings (and total compensation) of less-educated individuals, has led to the increasing realization of the importance of public and private health insurance coverage to individuals' work choices. While most single mothers could be expected to earn enough money by participating in the labor force to replace foregone AFDC benefits, it is far less likely that these mothers could replace foregone Medicaid benefits.[1] According to Kronick (1992), the probability of receiving employer-provided health insurance coverage declined for low-income workers during the 1980's. And, the fastest growing group of the uninsured are poor children. Also, poor health is more prevalent for lower income individuals, and so serves as an additional impediment to employment. Comprehensive welfare reform plus health care reform that involves significant cuts in the rate of growth of Medicaid expenditures will dramatically alter the incentive structure facing single mothers. This paper examines possible impacts of these changes on employment behavior.

The current approach to welfare reform is best characterized by the devolution of support programs to the states. One standard not left to the states is the maximum duration of eligibility for AFDC benefits: one version of the proposed Federal legislation imposes a five-year limit on the total number of years of eligibility per person. Considered in conjunction with the Medicaid cuts, significant numbers of poor single mothers and their children could be left without a safety net, and will be unable to procure regular, quality health care. Because these legislative changes are still underway, it is not known at this time what sorts of Medicaid eligibility restrictions the states will impose to control expenditures, but one possible change is to subject Medicaid eligibility to the same five-year time limit as AFDC coverage. Current welfare provisions link Medicaid eligibility directly to AFDC eligibility for most single mothers.

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[1]The sudden loss of all Medicaid benefits when income exceeds the AFDC break-even income level is referred to as the Medicaid notch. Other costs of working are far less likely to be offset by earned income, particularly child care costs.

The policy changes included in this paper's simulations include a five-year total time limit for AFDC (and Medicaid) coverage, and mandated employer-provided coverage for full-time workers. The simulations reflect approximations to the full economy-wide effects that would result from the policy changes. And, potential policy changes not considered explicitly here come into play as well, probably the most important of which are the proposed significant cuts in the rate of growth of Medicaid expenditures. Once hospitals and providers are pushed to their budgetary limits with regard to the percentage of full costs reimbursed by Medicaid, then cost-shifting might occur. That is, prices charged to those privately insured might be inflated to compensate for some portion of the Medicaid shortfall. However, as these private costs rise, private health insurance coverage rates will also fall, resulting in a larger percentage of the population being uninsured. So, clearly many of the current budgetary and policy changes currently under consideration are interrelated.

II. *Review of Literature*

The existing literature relating health insurance benefits to employment behavior is a recent but growing one, but focuses mainly on employer-provided coverage without consideration of the importance of publicly-provided coverage. There are some notable exceptions, however. Moffitt and Wolfe (1992) estimate the effect of the Medicaid program on employment behavior. They find that mandating employer coverage would increase the probability of LFP of single mothers by 8%, and that improving the expected benefits of Medicaid would decrease that probability, but by a smaller magnitude.

Wolfe and Hill (1995) examine the effect of maternal and children's health on the work effort of low-income single mothers and conclude that "extending health insurance coverage to all children of single mothers without respect to the mothers' AFDC status would induce a large percentage of these mothers to seek and accept employment..." Winkler (1991) models Medicaid explicitly as an in-kind benefit and considers its effects on labor supply behavior jointly with the AFDC program. She finds that Medicaid has a small but significant negative impact on the decision to work.[2] A drawback to Winkler's empirical analyses (as she mentions on page 313) is the fact that the availability of employer-provided health insurance coverage, an obvious alternative to public health coverage, is not considered. McCool and Monheit (1991) find that for single mothers, increased Medicaid eligibility at zero hours increases the probability of not participating in the labor market or working parttime. Yelowitz (1995) finds that increasing the income limit for Medicaid eligibility has a positive effect on LFP, but more so for ever-married women than for never-married women. And finally, Dor, Hunt-McCool and Johnson (1992) examine the effect of employer-provided health insurance coverage on the employment behavior of married women. They show that an increase in the probability of receiving employer-provided health insurance coverage significantly increases the probability of labor force participation for married women whose husbands do not currently possess such coverage. Note that nowhere in

[2]In her study of the link between AFDC recipiency and Medicaid coverage, Blank (1989) does not find that Medicaid coverage serves as a disincentive to work.

the existing literature is there an examination of the types of policy changes addressed in this paper.

III. *Theoretical Framework and Econometric Issues*

The fundamental research question is to examine the manner in which health-related employment barriers affect the labor force participation behavior of single mothers. The primary barriers addressed here include the relatively low probability of receiving health insurance coverage from the employer, and the higher probability of Medicaid eligibility if the mother does not work. Additionally, the independent effect of maternal and child health on employment is examined.

The underlying utility-maximizing model is comparable to that used by McCool and Monheit (1991), and is similar to Moffitt and Wolfe (1992) as well. It is drawn from Becker's (1965) household production model, and extended to model the demand for good health by Grossman (1972). The mother is assumed to maximize utility where utility is expressed as a function of work hours, nonlabor income, and family health. The mother maximizes this utility function subject to standard budget and time constraints, as well as a health production function. In the budget constraint, total market expenditures (including any out-of-pocket medical care expenditures or health insurance premium payments) equal total unearned income (excluding transfers) plus transfer income (including cash and in-kind transfers).

Ideally, total time would be expressed as the sum of market work, home-production time (including health production), and leisure time.[3] Data limitations restrict the components of total time to market time and nonmarket time. In the health production function, health status is determined by the consumption of market-based and home-produced health services; the mother's time is a primary factor in the latter.

Theoretically, an additional constraint should be an equation expressing the fact that total compensation is comprised of both wage and nonwage benefits, where the latter includes health insurance coverage. While theory tells us that employees must give up wages to get nonwage compensation, this tradeoff is nearly unobservable empirically. The problems are a lack of sufficient data to fully explain the structure of compensation, and the prevalence of a two-tiered compensation structure, in which high-wage workers receive health coverage and low-wage workers do not.

The maximization of this utility function subject to the three constraints yields demand equations, including the demand for leisure (usually shown as its corresponding work measure), and the demand for good family health. The key estimating equation, derived from the leisure demand equation, is a structural LFP probit, in which the discrete labor force participation choice

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[3]See Phelps (1973) for the derivation of a utility-maximization model which develops the notion that the consumption of health services takes time.

is expressed as a function of the mother's demographic characteristics, her own health status and that of her children, her potential market wage, the state's average AFDC grant, measures of the value of the value of public and private health insurance coverage, and controls for labor market conditions.

An important data measurement problem inherent in the analyses of health insurance issues is the difficulty associated with measuring (or calculating) the individual's valuation of the health coverage. As explained by Moffitt and Wolfe (1992), there is more than one way to impute the value of noncash benefits. Winkler (1991) relies on the government-cost approach, incorporating the government's total expenditures on Medicaid for a specific geographic area, divided by the total number of individuals eligible for this benefit. Winkler does not address the issue of employer-provided coverage, nor does she model the probability of public coverage. Moffitt and Wolfe develop a family-specific proxy measuring the family's valuation of both Medicaid and private coverage by incorporating "out-of sample" health care expenditures information (from the 1980 National Medical Care Utilization and Expenditure Survey, or NMCUES), and "matching" these data to the primary data by utilization patterns. Like Winkler, Moffitt and Wolfe do not address the endogeneity (and thus uncertainty) of Medicaid coverage. The reliability of their heterogeneity index is limited by the ability of that index to predict actual medical care expenditures accurately for their SIPP estimating sample, and equation identification in a complicated system of equations. This paper extends the focus of Winkler and Moffitt and Wolfe, and using simulations, updates the policy discussion to reflect the current debate. The goal is to identify a more straight-forward estimation technique to evaluate a broader array of policy proposals.

The two key regressors in the structural LFP probit reflect the valuation of public and private health insurance coverage. They are weighted measures of the predicted probabilities of public and private insurance coverage. For public coverage, the weighting variable is the state's average Medicaid expenditure per eligible resident. For private coverage, the weighting variable is a normalized private fee index that indicates how private physician fees vary across states.[4] These two weighting variables adjust the predicted probabilities of coverage to reflect the valuation of that coverage across states.

Predictions of the probability of public and private health insurance coverage are calculated using results from a multinomial logit model, where zero equals no coverage, one equals Medicaid coverage, and two equals employer-provided coverage. These three health coverage states are estimated jointly because it is likely that there is an unobserved variable

[4]This index is a proxy for health care expenditures by the privately insured. It was developed by the Urban Institute and the Center for Health Economics Research. See Loprest and Gates (1993). One advantage of using these state-level valuation variables is their exogeneity.

affecting all three states.[5] The resulting parameter estimates are used to construct the predicted probabilities of private and public coverage. Then, these predicted probabilities of private and public coverage for each individual are multiplied by the corresponding weighting variables to create the insurance coverage valuation variables.

Health status affects the single mother's wage level and employment choice directly. An unhealthy mother is more likely to be out of the labor force, and having ill children is likely to have the same effect. Consequently, dummy variables for the mother's and her children's health status are included in the structural LFP probit. The mother is considered to be unhealthy if she reports fair or poor health.[6] And, poor child health is indicated when the mother reports that any of her children suffers from any sort of long-lasting physical, mental, or emotional condition which limits his/her ability to run, work, or play. As will be seen in the data section, poor maternal health is much more prevalent in the data, and so likely to be more important in the labor force participation decision.

A predicted wage measure is also included in the LFP probit, constructed by estimating a sample-selection corrected wage equation for those with positive wages, and then predicting wages for all observations in the sample.[7] Other variables included in the LFP probit are age and years of education, dummy variables indicating the presence of infant and preschool children, the state's average AFDC benefit for a family of three, plus two more dummy variables to control residence in the South and in a metropolitan area. The LFP probit is written out in summary form below.

LFP = fn(predicted value of public coverage; predicted value of private coverage;
maternal health; child health; predicted wage; age; years of education;
infant in family; preschool child in family; state average AFDC benefit;
residence in the South; residence in a metropolitan area).

Results from the above probit are used to describe the relationship between the various regressors and the probability of being employed. Then, the results are used in policy simulations.

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[5]This follows Moffitt and Wolfe (1992).

[6]Moffitt and Wolfe (1992) and Wolfe and Hill (1995) use a sum of 8 reported measures of Activities of Daily Living, which includes for example, wearing glasses. The ADL questions in their 1984 SIPP data were asked of each individual in the panel, whereas the more limited five questions in the 1987 panel were only asked of those individuals reporting a serious health condition that lasted at least 3 months. As a consequence of this questioning scheme, the 1987 ADL's are unavailable for the bulk of the sample. Winkler (1991) does not incorporate information concerning health status.

[7]See Heckman (1979).

IV. *Description of the Data*

These analyses rely on data drawn from the sixth interview of the 1987 Panel of the Survey of Income and Program Participation (SIPP). The interview month varies across individuals in the SIPP, but ranges from July to December 1988. The SIPP is a nationally-representative sample, and is comprised of a series of panel surveys first begun in 1983. The estimating sample consists of single females, ages 18 through 55, who are mothers or guardians of children under the age of 18. Sample means are given in Table 1. There are 872 single women in the sample, of whom 531 (or 61%) participate in the labor force, and 423 (79.7%) work fulltime. The average age is 33.6, with a mean of 12 years of education. Forty percent have a preschool-aged child, while nearly 20% have an infant. Fourteen percent report being in fair or poor health, and 3.7% report having a child with a health problem. Thirty-two percent of the sample is nonwhite. In addition, 25% of the sample reports receiving AFDC support, but 35% report having received AFDC at least once during their lifetime.

Approximately 33% of the mothers are covered by Medicaid. And, 61% of the workers are covered by employer-provided health insurance coverage, compared to Swartz' (1989) estimate of 64% for all US workers. Consistent with high fixed costs of work, the average hours worked per week equals 38, and the average hourly wage equals $8.23. These figures represent the "creaming" of the current welfare system: those mothers with sufficient qualifications to command a minimally subsistent compensation package are most likely to seek market work.

Approximately forty percent of the sample have incomes below the poverty threshold, while 25.7% live between one and two times the poverty line. Combining these two groups into a single low income sample of 576 mothers produces a more targeted group for the policy simulations. Means for this poverty sample are also given in Table 1. Forty-six percent of this sample participates in the labor force (68.3% fulltime), earning an average wage of $5.61, with 49% receiving employer-provided coverage. Forty-four percent of these mothers are covered by Medicaid, 36% receive AFDC, and 51% have received AFDC at least once during their lifetime. This subgroup is a little younger and less educated than the full sample (at 32.8 years of age and 11.4 years of education), and fewer have children under the age of six. Nearly 18% of this sample reports being in fair or poor health. Twelve percent of the full sample and 18% of the low income sample report having received AFDC for at least five years and so might lose AFDC (and Medicaid) coverage under some versions of welfare reform currently under consideration.

V. *Empirical Results*

Coefficient estimates from the LFP probit are given in Table 2. The weighted public and private health insurance coverage have the expected signs and both are statistically significant at the 5% level. That is, increases in the weighted probability of public coverage reduce the probability of LFP, while increases in the weighted probability of employer-provided coverage increase the participation probability. These findings imply that Medicaid serves as a disincentive to work, but that the availability of employer coverage might dissipate this effect somewhat.

Poor maternal health has a significant negative impact on the probability of LFP, and the absolute magnitude of this effect in the economy is likely to grow if recent budget cuts do indeed reduce coverage, and therefore health, for poor single mothers. Poor child health has a negative but not statistically significant impact on LFP, consistent with Salkever (1990). The wage coefficient is significantly positive, with a corresponding elasticity equal to 1.5. This estimate is consistent with previous findings in the literature, which tend to show large participation elasticities but small hours elasticities for single mothers.

Each of the remaining significant coefficients reveal a negative relationship to employment. In particular, being older and having more education have a negative impact on employment. These effects are not inconsistent with the literature on single mothers. And, as expected, the presence of an infant or preschool child in the single mother family has a negative impact on employment. This is due to the high cost of child care for younger children, as well as the greater "psychic" cost associated with leaving very young children in non-maternal care. Residing in a metropolitan area decreases the probability of employment, possibly due to the greater access to welfare benefits. Finally, the probability of employment is lower for those single mothers residing in states with higher monthly AFDC payments.

Four different policy simulations were implemented: 1) elimination of Medicaid coverage for those single mothers with five or more total years of AFDC recipiency; 2) total elimination of Medicaid coverage; 3) employer-mandated health insurance coverage for all fulltime workers; and 4) a combination of (1) and (3). While only the first simulation relates directly to legislation currently under debate, each of the simulations has been considered in recent months, and given the budget crises likely to overtake many state budgets, the removal of large numbers of single mothers from Medicaid coverage is not far-fetched. Finally, while mandated employer-provided coverage is inconsistent with current political leanings, it is interesting to show the relative responsiveness in employment behavior of such a policy move.

The resulting mean predicted probabilities of employment resulting from each policy simulation for both the full sample as well as the low income sample are shown in Table 3. The extension of the 5-year AFDC recipiency limit to Medicaid coverage has only a small impact on the average predicted participation probability for the full sample, but increases the predicted participation rate of the low income sample by 21%. Totally eliminating Medicaid coverage causes a 10% increase in the probability of participation for the full sample, and a 33% increase for the low income sample. Of course, this simulation is an over-statement because eliminating access to care for many individuals would affect maternal and child health, thereby negatively influencing participation.

Mandating employer coverage for all fulltime workers has the largest impact on employment behavior for the full sample, causing a 14.3% increase.[8] Again, this is merely an

[8]This finding is larger than the 8% found by Moffitt and Wolfe. Their simulation mandated coverage for all workers, instead of just fulltime workers. Also, their model treated

approximation to the full effect of such a policy change because one would expect overall labor demand to fall, and maternal and child health to improve. This finding suggests that if the impending significant cuts in the rate of growth of Medicaid and Medicare cause cost-shifting that result ultimately in declining private coverage as well as worsening health, efforts to reduce the welfare rolls will be hindered. Finally, the last simulation shows the combined impacts of welfare and health care reform undertaken jointly. Surprisingly, for the low income sample, considering these two policy revisions in combination does not differ substantively from the result of instituting either change by itself. This finding is possibly due to the significant but limited role health benefits play in the employment decision.

This paper shows the importance of health insurance coverage and health status in the employment decision. Single mothers are quite responsive to issues of coverage when making their participation decisions, and coverage is even more important to low income single mothers. However, poor maternal health status is also a barrier to employment. A primary recommendation for policy-makers is to proceed with caution when considering dramatic health care and welfare reform. While AFDC and Medicaid might serve as strong disincentives to work, dramatically reducing expenditures for such support might also hinder employment as a consequence of worsening maternal and child health and declining private coverage.

Medicaid recipiency as certain and so did not permit examination of policy changes that would affect Medicaid coverage. Neither Moffitt and Wolfe or Winkler examined low income single mothers.

Table 1: Variable Means
(Standard deviations in parentheses)

	Full Sample		Low-Income Sample	
	All observations n=872	LFP=1 n=531	All observations n=576	LFP=1 n=265
Age	33.59	34.84	32.81	33.92
	(8.31)	(7.78)	(8.29)	(7.73)
Years of education	12.00	12.62	11.41	11.95
	(2.47)	(2.39)	(2.32)	(2.31)
Nonwhite	0.32	0.27	0.36	0.32
	(0.47)	(0.45)	(0.48)	(0.47)
Infant child	0.18	0.12	0.20	0.12
	(0.39)	(0.32)	(0.40)	(0.33)
Pre-school child	0.27	0.21	0.32	0.27
	(0.45)	(0.41)	(0.47)	(0.44)
Poor maternal health	0.14	0.08	0.18	0.09
	(0.35)	(0.26)	(0.38)	(0.28)
Poor child health	0.04	0.03	0.04	0.03
	(0.19)	(0.17)	(0.20)	(0.18)
AFDC recipiency	0.25	0.05	0.36	0.08
	(0.44)	(0.21)	(0.48)	(0.28)
Ever AFDC recipiency	0.39	0.21	0.51	0.28
	(0.49)	(0.41)	(0.50)	(0.45)
LF participation	0.61	1.00	0.46	1.00
	(0.49)	(0)	(0.50)	(0)
Part-time	0.12	0.20	0.16	0.32
	(0.33)	(0.40)	(0.35)	(0.47)
Wage	5.01	8.23	2.58	5.61
	(5.93)	(5.59)	(3.11)	(1.98)
Weighted public coverage	625.02	484.84	753.98	602.84
	(510.13)	(395.25)	(534.58)	(412.40)
Weighted private coverage	0.43	0.49	0.36	0.42
	(0.21)	(0.19)	(0.18)	(0.18)
Metro residence	0.75	0.76	0.73	0.73
	(0.43)	(0.43)	(0.44)	(0.45)
South residence	0.33	0.35	0.36	0.40
	(0.47)	(0.48)	(0.48)	(0.49)

Table 2: Structural LFP Probit Coefficients
(t-statistics in parentheses)

Variable	Coefficient
Weighted probability of Medicaid coverage	-0.0003** (-2.00)
Weighted probability of employer coverage	1.46** (2.17)
Poor maternal health	-0.86*** (-5.97)
Poor child health	-0.03 (-0.12)
Predicted Wage [wage elasticity]	2.46*** (4.69) [1.50]
Age	-0.02** (-2.24)
Years of education	-0.17*** (-2.92)
Presence of an infant child	-0.38*** (-2.71)
Presence of a preschool child	-0.21* (-1.79)
Residence in metropolitan area	-0.23* (-1.87)
Residence in the South	0.22 (1.41)
Mean State ADC expenditure	-0.001** (-2.19)
Intercept	-1.19* (-1.85)
Log-likelihood	-468.12

*, **, and *** indicate significance at 10%, 5%, and 1% level of significance

Table 3

Policy Simulations: Mean Predicted Probabilities of LFP
(percentage change shown in parentheses)

	Full Sample	Low Income Sample
Actual LFP	0.609	0.460
Simulation 1: Medicaid w/5-year limit	0.619 (1.6)	0.557 (21.1)
Simulation 2: Elimination of Medicaid	0.668 (9.7)	0.614 (33.4)
Simulation 3: Mandated coverage--FT	0.696 (14.3)	0.612 (33.0)
Simulation 4: Combination of 1 and 3	0.706 (15.9)	0.627 (36.3)

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