

Does Cost-sharing Effect Take-up Rates for the Children's Health Insurance Program?

James A. Butikofer

October 21, 2004

1 Introduction

“Approximately 23 percent of children from families with incomes between 100 and 200 percent of the federal poverty level and 27 percent of children in poverty lacked health insurance in 1996 (Dubay, Kenny and Haley, 2000). A recent analysis indicated that the proportion of children without insurance for some part of the year might be as high as 40 percent (Congressional Budget office)” (Joyce and Racine, 2003). The State Children's Health Insurance Program (SCHIP) was established in 1997. The program was targeted at low-income children (up to 200% FPL and up to age 18) whose family income exceeded the income level to qualify for Medicaid. One study found that two-thirds of eligible uninsured children are in two-parent families. Over seventy-five percent of the parents of these children work, and only five percent receive welfare (document).

States were given the responsibility to run the programs with the federal government sharing part of the cost. CHIP allows states more flexibility than Medicaid in establishing eligibility criteria, determining benefits and designing the program. The reimbursement by the Federal government to states for CHIP is also more generous than Medicaid. The states had three options when developing the program: 1) establish a separate CHIP program for children ineligible for Medicaid; 2) expand existing Medicaid programs to include these children; or 3) a combination of the two. States choosing to expand their Medicaid program are limited in cost-sharing; while those creating separate CHIP programs are able to use cost-sharing in the form of deductibles, premiums, enrollment fees, co-payments, and coinsurances, but

have the tradeoff of higher start-up costs. As of March 2001, 19 states expanded Medicaid, 15 created a separate CHIP program and 17 states used a combination of the two programs. Other states have since made adjustments to their programs. Rosenbaum (1999) prepared a report for the Health Care Financing Administration and the Health Resources and Services Administration, looking at questions related to allowing cost-sharing to be a part of CHIP. In particular, they were analyzing possible problems with excessive cost-sharing. Federal guidelines limit the levels of cost-sharing. Cost-sharing can be used on a sliding scale based on income. Co-pays would vary based on if fee-for-service or managed care were used. Co-pays for fee-for-service are \$1 for services below \$15, \$2 for services between \$12.01 and \$40, \$3 for services between \$40.01 and \$80, and \$5 for services above \$80. Managed care co-pays would be capped at \$5 for all services, excluding inappropriate emergency room care, which would be capped at \$10. Preventive care defined as well-baby and well-child care, including age-appropriate immunizations, is not allowed to have cost-sharing, but all other services are allowed to have cost-sharing imposed. The biggest impact of cost-sharing would be on families with children that have chronic conditions that require frequent doctors visits. Total expenditures on cost-sharing are capped at 5% of the families' annual income, to help protect these families. The law doesn't specify if income is gross or net income, so the interpretation varies across the states. The authors conclude that only about 11% of children would have health care expenditures in a year that reach the 5% out-of-pocket cap, but fear remains that children with chronic conditions could be adversely affected.

Cost-sharing is used to help reduce problems of moral hazard and crowd-out of private policies (this use suggested by Feldstein (1971)). Gruber (1997) suggests that cost-sharing could discourage needed care. The extreme case of discouraged care is children not being enrolled in the program. The premiums and co-pays are small, but for the low income they may impose a burden. The cost-sharing has been blamed by some state official for lower take-up rates among those eligible, creating a conflict of interest for the states to enroll all eligible children. One of the unique features of CHIP is the effort that has been expended to try and get all the eligible children on the program. Applications for Medicaid have been simplified. Most states have removed asset requirements, made re-certification easier, and developed new ways to get children enrolled. Cost-sharing could work against these efforts. The focus on the cost-sharing is that it will decrease enrollment, but some facts are missing from this argument. The true effect of cost-sharing

on enrollment into the program is not clear. As noted above the charging of premiums and co-pays can lower enrollment, but CHIP is a low cost option. Enrolling may be the lowest cost option for health-care even with the cost-sharing, thus the discouragement of possible cost-sharing should have little effect on decreasing program uptake. Emergency room care could be considered a substitute, but it has its drawbacks. Long waits in the emergency room and no follow-up care may not be very appealing. For those who have to pay the premium, there are advantages. They can go see a doctor with less waiting time, and better follow-up care. They can also go back to the same doctor developing a patient/doctor relationship. The existence of cost-sharing might actually make CHIP more acceptable giving an appearance of private insurance lower the stigma of public health coverage. The reduction in enrollment caused by cost-sharing may be offset by the benefits of the program. CHIP is unique among public health insurance programs. It differs from Medicaid for children because it allows cost-sharing. It also differs from Medicare, because even with cost sharing, take-up is near 100% of those eligible. This difference raises a question that has not been addressed in previous work on Medicaid and Medicare. This paper will address the question of how cost-sharing affects take-up into CHIP. The variables of interest will be premiums and co-pays as they are the form of cost-sharing most used by the states. The remainder of the paper will test how charging enrollees into CHIP effect the probability that eligible children will be enrolled. The rest of the paper is structured in the following way: section two will look at the relevant literature, section three discusses the data sources, section four looks at the empirical result method used, section five looks at sources of bias and endogeneity, and section six looks at the regression results.

2 Literature Review

The CHIP program is new so there are few published papers that look at CHIP, but there are working papers addressing crowd out of private insurance by the availability of CHIP and the effect CHIP has on children being immunized. Also the study of the Medicaid program is helpful to understand how best to analyze the CHIP program. LoSasso and Buchmueller (2004) look at the effects of CHIP on health insurance coverage. They use CPS data for the years 1996 through 2000. They conclude, “between 4% and 10% of children meeting income eligibility standards for the new program gained

public insurance.” They note that while low, these take-up rates are higher than previous Medicaid expansions. They also measure that crowd-out of private insurance was between 18% and 50%. They note that take-up rates can affect program cost and efficiency. They ignore the effects of cost-sharing on take-up, but single out other factors that influence take-up. They point out that the population being targeted has little prior experience with public insurance and thus lack knowledge of the program. Also negative perceptions of the quality of public programs and stigma of public assistance may limit parents’ desires to enroll their children. LoSasso and Buchmueller also cite previous work by Currie and Gruber (1996) finding that for Medicaid expansions, take-up rates fall as coverage is extended up the income distribution highlighting that I need to control for income.

LoSasso and Buchmueller use an instrumental variables approach similar to that used by Currie and Gruber (1996), Cutler and Gruber (1996), and Ham and Shore Sheppard (2001) in studying Medicaid expansions. The instrumental variables approach uses the variation in the timing and extent of coverage of the expansion that is available. Prior to CHIP, the states were required to provide Medicaid coverage up to 133% of the federal poverty line, and could go as high as 185% and still receive federal matching funds. Some states used their own funds to extend eligibility even higher. When CHIP was started, the states started their individual programs at different times and set the upper limits at different level. The highest (like Missouri) set the cutoff at 300% (check, but one I believe is at 350 %) of the poverty line.

LoSasso and Buchmueller identify a possible source of bias in the CPS data. The implementation of CHIP (with its cost-sharing) and even Medicaid using managed care may have some users report that they have private insurance instead of public insurance. To try and lessen this bias, the authors used two different dependent variables: coverage by employer-sponsored private insurance, which should be recognized as different from CHIP and private non-group insurance coverage, which could be mistaken for CHIP. I try and avoid this problem by using later CPS data. The 2001 CPS was changed to try and improve the estimates of uninsured children and to better measure the effects of CHIP. The sample size was increased and over sampling was done in areas with lower incomes. The new survey also included a new question asking about CHIP enrollment.

Joyce and Racine (2003) look at the effects of CHIP on increasing vaccinations of CHIP eligible children. Coverage of immunization costs is mandated

under the program. They find that the program had no impact on the differential between poor/near-poor to non-poor children for "older vaccines," but the program had helped close the gap between poor/near-poor and non-poor children by 7% to 16% for being up to date on the new varicella vaccine. They conclude that the program has an effect only on the spread of use of new vaccines.

3 Data

I use two sources of data for estimating the effect that cost sharing has on take-up into SCHIP. The Current Population Survey (CPS) collects insurance data in its' March supplemental survey. I can identify those children enrolled in CHIP. The CPS data is also the source of information on the individual such as age, race, family income, state of residency, and health.

The survey was revised in 2001 to include a question specifically asking about enrollment in SCHIP. Previous to this revision enrollment in SCHIP was only recorded by answering under the "other insurance" category. The revision, including an increase in sample size, was aimed to increase the accuracy of actual enrollment. The survey asks about the previous year's insurance status, so the 2003 survey collects information about 2002. There is some question if respondents really do report the previous year's information or the current status. I will assume answers reflect the previous year's status. To take advantage of the more accurate responses I use data from the 2001-2003 March CPS surveys.

The second data set is the State Children's Health Insurance Program Database. This database contains information on every state program. Its' contents include the kind of program the state runs (whether it is Medicaid expansion, a separate CHIP program, or a combination program), kinds of cost sharing, amounts of cost-sharing, any changes made to the initial program setup, and other program facts. Table 1 shows CHIP eligibility based on a families income measured as a percent of the Federal poverty level (FPL). In the sample eleven of the fifteen states have set their maximum level of family income at or above 200% of the federal poverty line with the highest level being 300

There is variation in the cost-sharing used by the 15 states with separate CHIP program. Six states use co-pays with five charging fees of \$5 or less a visit and one charging \$10 a visit. Seven states have a cap on the premium

charged for each individual enrolled. Eleven states, including the previous six, have a cap on how much a family can be charged for premiums. Table 2 shows the states premiums and co-pays.

The two datasets have no direct information on CHIP eligibility. I have had to construct a measure of an individual's eligibility. Eligibility for CHIP was estimated by looking at the number of persons in an individual's family and calculating the poverty line for that family. I then look at the states eligibility criteria, which is based on a percent of the FPL. The floor for eligibility in CHIP is the cut off for being in Medicaid. The cut off point varies by age and state. The ceiling cut off for CHIP is a percent of the FPL and it is uniform across age for the state.

When designing premiums states designed them differently. Some states charged a monthly premium while others charge it quarterly. I divide the quarterly premium by four to obtain a monthly amount so all states are in the same time units.

States also varied on setting premiums. Some states charge the premium by the individual child, other charge a premium per family regardless of the number of children in the family on CHIP. Other states do both so the family premium acts like a cap on the size of premium a family can be charged. I will use a constructed measure of premiums charged that measures the amount that a family faces if it enrolls in CHIP. The variable then allows comparison across states of the impact charging premiums has on the probability of enrollment.

4 Empirical Estimation

I will use a probit model to estimate the effect cost-sharing has on take-up into SCHIP. The probit and logit models give similar results, especially in the middle of the distribution. Using the OLS limited dependent variable model presents some problems with the probabilities ranging outside of the zero to one interval and problems with heteroskedasticity. The model will be:

$$P(pchip_i = 1 | \vec{x}, chipeligible) = \Phi(\beta_0 + \beta_1 premium_i + \beta_2 copay_i + demog_i \delta + state_i \gamma + state_i \rho)$$

The regression will be run using only individuals that have been found eligible using my eligibility criteria. *Pchip* is a dummy variable that has the value 1 if the individual was reported enrolled in the CHIP program and

zero otherwise. *Premium* is a variable reporting the size of premium charged per month for the enrollment of all the children in a family in CHIP. This is one of the two cost-sharing variables of interest. *Copay* is the other cost-sharing variable of interest; it measuring the co-pay per visit an individual is charged. *Demog* is a collection of individual characteristics. It includes the individual's age, family income, sex, race, and whether the child has both parents, only a mother, only a father, or no parent in the home. It also has a measure of the child's health, and the number of siblings in the family. *State* is a set of dummy variables that controls for characteristics of the state. This term will help with possible problems associated with program design being endogenous. *Year* is a dummy variable for the year.

Interpretation of the probit model's coefficients is not straight forward. The signs on the coefficients are correct, but the coefficients can't be interpreted as the partial effects. The partial effects are calculated as with the x's being evaluated at specific values. I will evaluate at the mean of each of the x's. I will report the partial effects in the tables. A negative sign on premium and copay will indicate that cost sharing reduces the probability that an eligible individual will enroll in CHIP.

5 Sources of Bias

Eligibility for the CHIP program is set by the individual states, and then eligible families choose whether they want to be in the program. Both decisions have the potential to introduce bias. The initial idea was to allow states to design programs with the specific population in mind. There could be factors within the states that influence people's decision to participate in CHIP, but also influence the level of the cost-sharing variables. Such factors could include ideology about care for the poor. States for example could have strong beliefs about not helping the poor resulting in higher premiums as well as increasing stigma for those eligible for the program. This line of reasoning would create a negative bias on the premium and co-pay variables. The higher stigma could also lower the number of eligible individuals willing to enroll in the program. I could try and control for state ideology by the split in republican/democratic party supporters in the state. State fixed effects could control for this source of bias.

States were able to design their own programs. They could select the population to cover based on income with in federal government guidelines.

States could use several criteria on which to base their decisions, these could include total expenditure on the program, a target for a drop in the number of uninsured children, or a certain number of children covered.

The states could then reach their goal by adjusting cost-sharing, enrollment caps, and the setting of the income level of eligibility. After the initial decisions on program design, states were able to make adjustments to their programs. The program design and changes could be endogenous. States decisions can effect enrollment causing a bias in the cost-sharing variables. I am not able to sign this bias. It could go either way depending on what the states are trying to achieve. I might be able to discover a little of the states intentions by looking at the reports they submit to the federal government to get approval for the changes. I might then be able to sign the bias generate by those changes.

The family's decision to participate in the program could also cause problems. I can't control for everything that affects a family's demand for CHIP. I can control for the children's health status, family size, effects of whether there is only a mother, only a father or both parents in the home. I can't control for the risk averseness of the parents. Parents who are more risk adverse could be more willing to enroll their child in the program, while less risk adverse parents may not enroll their child in the program. I can't sign this bias, but I don't believe there is a relationship between an individual's risk aversion and how the state designs its' program. Omitting risk aversion from the regression shouldn't bias the results.

6 Regression Results

Constructing the chip eligibility variable using only the family size, income and the federal poverty level led to problems. Of the 1,464 people on the program the eligibility variable indicates that only 452 of them should be on the program. Possible reasons for the errors are that eligibility is measured using monthly income and the CPS only has annual income data. States can also make allowances for work expenses and day care thus shifting people into the program that I measured as earning too much. States can also use gross or net income as the measure of income. To try and compensate for this error I adjust the income at both the top and bottom ends to try and pick-up the boarder line people. If I adjust the end points by 20% I get 697 people that are on the program and that my estimates say are eligible for

CHIP. The measure is still rough, but tries to account for the possible error.

7 Conclusions

Several authors have pointed out the importance of knowing the effect that cost-sharing has on take-up into CHIP. The program was designed to help reduce the number of uninsured children with effort spent trying to get children enrolled. My work is not complete. I still need to improve the empirical results. My measure of eligibility still needs revision, as well as a better measure of premiums. I will also need to try and eliminate the sources of bias I have discussed.

References:

Currie, Janet, and Jonathan Gruber. "Utilization of Medical Care, and Child Health," *The Quarterly Journal of Economics* May 1996. Vol. 111, No. 2, 431-466. Document "The State Children's Health Insurance Program: Preliminary Highlights of Implementation and Expansion."

Feldstein, Martin. "A New Approach to National Health Insurance," *The Public Interest* 1971, 23,93-105

Gruber, Jonathan. "Policy Watch: Medicaid and Uninsured Women and Children," *The Journal of Economic Perspectives*. Vol.11, No.4 (Autumn, 1997), 199-208.

Joyce, Ted, and Andrew Racine. "Chip Shots: Association between the State Children's Health Insurance Programs and Immunization Coverage and Delivery," Working Paper #9831 July 2003.

LoSasso, Anthony T., and Thomas C. Buchmueller. "The Effect of The State Children's Health Insurance Program on Health Insurance Coverage," NBER working paper (now published) 9405, December 2002.

Rosenbaum, Sara, Anne Markus, and Dylan Roby. *An Analysis of Implemen-*

tation Issues relating to CHIP Cost-sharing Provisions for Certain targeted Low Income Children. Report for the Health Care Financing Administration and the Health Resources and Services Administration June 1999.