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RESEARCH ARTICLE

Public Programs

SCHIP's Impact on Dependent Coverage in the Small-Group Health Insurance Market

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Objective. To estimate the impact of State Children's Health Insurance Program (SCHIP) expansions on public and private coverage of dependents at small firms compared with large firms.
Data Sources. 1996–2007 Annual Demographic Survey of the Current Population Survey (CPS).
Study Design. This study estimates a two-stage least squares (2SLS) model for four insurance outcomes that instruments for SCHIP and Medicaid eligibility. Separate models are estimated for small group markets (firms with fewer than 25 employees), small businesses (firms under 500 employees), and large firms (firms 500 employees and above).
Data Collection/Extraction Methods. We extracted data from the 1996–2007 CPS for children in households with at least one worker.
Principal Findings. The SCHIP expansions decreased the percentage of uninsured dependents in the small group market by 7.6 percentage points with negligible crowd-out in the small group and no significant effect on private coverage across the 11-year-period.
Conclusions. The SCHIP expansions have increased coverage for households in the small group market with no significant crowd-out of private coverage. In contrast, the estimates for large firms are consistent with the substantial crowd-out observed in the literature.

Key Words. Small businesses, SCHIP, crowd-out, small-group market

As part of the State Children's Health Insurance Program's (SCHIP) enabling legislation, states are required to implement strategies to prevent families from substituting publicly funded SCHIP coverage for an existing private policy. Beyond broad estimates of this problem's magnitude, states have limited information on how to focus their efforts across insurance markets. This paper examines the role of SCHIP on children's coverage in the small-group health insurance market and tests whether SCHIP take-up and crowd-out differ for children with parents working at small firms and large firms.

A key concern surrounding SCHIP and other plans to cover the uninsured is the degree to which public insurance substitutes, or crowds-out, private insurance. An extensive literature examines the impact on private coverage of SCHIP and previous public eligibility expansions. Total crowd-out estimates vary. For the Medicaid expansions in the early 1990s, Cutler and Gruber (1996) found that up to 50 percent of the increase in public coverage was offset by a decrease in private coverage. Subsequent studies for the same expansions with different data and varying methodologies found lower crowd-out rates, and, in a few cases, no crowd-out (Dubay and Kenney 1996; Thorpe and Florence 1998; Ham and Shore-Sheppard 2005; Shore-Sheppard 2005). Studies examining the more recent SCHIP have produced crowd-out rates approaching the 50 percent mark found by Cutler and Gruber (LoSasso and Buchmueller 2004; Hudson, Selden, and Banthin 2005). A detailed overview of the crowd-out literature can be found in Gruber and Simon (2008).

Few authors have examined how crowd-out varies across subpopulations and state-level regulations. Since SCHIP extends public eligibility to higher income children who are covered more often by private insurance, several studies estimate crowd-out at different levels of income. These studies find little to no crowd-out for households in poverty, but crowd-out increases to 50 percent for households at 150 and 185 percent of the federal poverty level (Dubay and Kenney 1997; Card and Shore-Sheppard 2004). In addition to these poverty level effects, LoSasso and Buchmueller (2004) incorporated other state policies into their models and found waiting periods imposed before enrollment also reduced the crowd-out effect.

No previous study examines whether crowd-out might differ in the small group market or for small businesses. Although many cut-points are used in the academic literature, the GAO defines the small-group market as firms with up to 50 employees (GAO 2009), and the U.S. Small Business Administration (SBA) defines small businesses as firms with up to 500 employees. In 1995, before the SCHIP expansions, one-fifth of the children in households with parents working at small businesses (fewer than 500 employees) lacked health insurance, compared with only 4 percent of children with both parents working at large firms (Seiber and Florence 2008). However, it is unclear whether

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small businesses and the small-group market would experience more or less crowd-out than the large-group market. Since children with parents at large firms are more likely to be insured, crowd-out could be higher at large firms. However, access to a group plan with employer premium contributions could make public insurance less appealing for children with parents working at large firms. This study will be the first to examine these questions of crowd-out in the small-group market.

This study uses the 1996–2007 March Supplements to the Current Population Survey (CPS) to examine the impact of SCHIP in the small-group market. We use a two-stage least squares instrumental variables estimator (2SLS) to estimate the impact of Medicaid and SCHIP eligibility on the children's insurance outcomes. We estimate separate crowd-out estimates for large and small firms and test the sensitivity of the estimates against firm size definitions. Finally, we compare the crowd-out observed in the 2SLS estimates in the small- and large-group market.

Data and Methods

To assess SCHIP's impact on the small-group market, we use data from the annual March supplements of the CPS for the years 1996–2007. The March CPS is collected by the U.S. Census Bureau on behalf of the Bureau of Labor Statistics. From 1996 to 2001, the CPS sampled approximately 60,000 households annually, which comprised approximately 120,000 total individuals. Starting in 2002, the March survey was expanded to almost 100,000 households and comprised more than 200,000 individuals. The March CPS surveys are an extensive collection of information on the work experience, income, and demographics of the U.S. noninstitutionalized population. These surveys are also primary sources of information on health insurance coverage for the U.S. noninstitutionalized population, with data collected on each individual who resides in a sampled household.

Each March supplement asks about a person's work experience and health insurance coverage in the prior calendar year, with the respondent providing information for each member of the household. Therefore, the data contain information on labor market experience and health insurance coverage for 1995–2006. Dates used in this study represent *calendar* years and not *CPS survey* years. Individuals are asked to report all types of health insurance they had in the previous year. This means that some individuals may report multiple types of coverage during the year. However, there is no information in the CPS on the duration of coverage.

The CPS contains a summary measure of household income, and it also calculates how that income compares with the federal poverty threshold in that year of the survey. However, the CPS definition of a family is not necessarily the same definition used by private health insurance plans or the SCHIP and Medicaid programs when determining eligibility for coverage. For example, a teenage mother living with her parents would be counted as having her parent's income in the CPS. However, for SCHIP or Medicaid eligibility, only her income would be counted. For that reason, we construct a family unit measure we call a "health insurance unit" (HIU), which is based on general health insurance eligibility rules, and then calculate the income for each HIU as the criteria to be used for estimating SCHIP and Medicaid eligibility. We use these HIUs as our definition of families in the analysis.

State SCHIP plans, and the resulting increase in public program eligibility, were developed quickly after the passage of the Balanced Budget Act in 1997. By December 1998, 43 functioning state plans were in place; all states had functioning plans by the end of 1999 (Herz, Peterson, and Baumrucker 2007). While every state had a SCHIP program in 1999, enrollment initially was slow to increase. After the slow start, enrollment in the program grew steadily each year until enrollment stabilized in federal fiscal year 2004 (October 1, 2003–September 30, 2004) (CMS 2009). In order to properly capture the impact of the SCHIP program on overall insurance coverage, it is important to include data on the program before its inception, during the eligibility expansions and later enrollment outreach efforts, and after the program is fully implemented. For that reason, we use data that measure insurance coverage from 1995 to 2006 (CPS years 1996–2007). It is also important to note that our eligibility measure contains cross-sectional variation (differences in eligibility levels across states) as well as time-series variation (changes in eligibility over time). Therefore, crowd-out can be identified by both types of variation. Our estimates need not be limited to the years when eligibility levels changed.

Two broad approaches are routinely used to estimate the extent of public–private crowd-out. The first, econometric-based approaches, use variations of Cutler and Gruber's (1996) specification (LoSasso and Buchmueller 2004; Shore-Sheppard 2005; Gruber and Simon 2008). These studies rely on variations between states, and they typically estimate one equation per insurance outcome and use an instrumental variables approach to address potential endogeneity in the public eligibility variable. The second approach relies on primary data collection to estimate crowd-out (also called substitution in the literature). These studies survey SCHIP enrollees and their parents to determine their insurance experience before enrolling in SCHIP (Sommers 2007,

Shone et al. 2008). The costs of primary data collection often lead analysts to focus on smaller populations (frequently one state), but these primary data allow in-depth descriptions of crowd-out causes.

Our study focuses on how SCHIP take-up and crowd-out differ between firms nationally, so we adopt the econometric approach to estimate crowd-out. We assume that a child's insurance coverage is a function of his or her eligibility for a public program (Medicaid and SCHIP):

$$\text{Coverage} = \alpha + \beta_1 \text{Eligible} + \beta_2 \text{X} + \beta_3 \text{State} + \beta_4 \text{Year} + \varepsilon \qquad (1)$$

The model includes a vector of demographic variables, *X*, to control for family structure, family income, urban residence, the child's race, ethnicity, immigrant status, and age. In addition to the demographic controls, we include dummy variables for each state and each year in the data.

We estimate a separate equation for each of the four main insurance outcomes: uninsured, public insurance, any private insurance, and dual (public+private) coverage. Although SCHIP regulations allow states to create a separate SCHIP program, use the funding to expand their existing Medicaid program, or implement a combination of the two, the CPS only collects a single Medicaid outcome for all Medicaid and SCHIP enrollees. We consider multiple specifications to estimate the effect of SCHIP eligibility on private coverage. We first estimate models for any private coverage, employer-sponsored coverage, and other private (nongroup) coverage. The dual-coverage category represents children reporting both public and private insurance.

The eligibility variable in Equation (1) presents two problems. First, states consider many criteria to determine Medicaid and SCHIP eligibility, including household income, age of the applicant, household wealth, citizenship documentation, income disregards for some medical expenditures, and other criteria. Since survey data do not measure all dimensions of Medicaid eligibility, studies typically use an income-based model to estimate eligibility. We combine the respondent's age with the household income thresholds in the state of residence for the relevant year to estimate eligibility.

The possible endogeneity of the eligibility variable presents a second problem. Cutler and Gruber (1996) highlighted the fact that if households receive part of their compensation as employer-sponsored insurance, eligibility will be endogenous to the private insurance equation since the employer-sponsored insurance should be reflected in lower wage income and higher eligibility. To account for this endogeneity, we instrument for the public eligibility variable. In these models the standard instrument is a simulated eligibility variable representing the generosity of a state's Medicaid and

SCHIP program, independent of a state's demographics or economic conditions (Currie and Gruber 1996; Cutler and Gruber 1996; LoSasso and Buchmueller 2004). To construct the instrument, we sampled 500 children of each age (500 infants, 500 one-year-olds, 500 two-year-olds, etc.) from each year of the full/national CPS and passed that sample through each state's eligibility criteria described above. This process yielded an average eligibility for each state in each year of the analysis. We use this simulated eligibility measure in the first stage of 2SLS estimates of Equation (1).

Policy makers have explicit definitions for the small-group market and small businesses. However, the firm size categories used by many large household surveys often do not correspond to these definitions, requiring most authors to choose a cut-off based on the categories in the data (frequently 100 employees or 200 employees). In this paper, we use two policy-based definitions for the small-group market and small businesses. In health insurance markets, all states define small groups as firms with less than 50 employees (Morrissey 2008; GAO 2009; KFF 2009). The CPS does not have a category for fewer than 50 employees, so we designate employees in firms with less than 25 employees as the "small-group" market. With the general policy interest in small firms, we create a broader, "small-business" category. The U.S. SBA uses total revenue and the total number of employees at a firm as criteria for identifying small businesses. The CPS does not include data on employer revenues, so we use the SBA's firm size criteria of firms with fewer than 500 employees as the definition of small businesses.

Firm size is ambiguous for children in mixed-firm families, where both parents work at firms of different sizes. Families with only one working parent and families where both parents work at the same size/category firm fit well in our small-group and small-business categories. For two-worker households with mixed firm sizes, we assign the household to the larger of the two firm sizes. The tables in the results section present results for three group categories:

> Small Group—All working parents employed by firms with <25 employees.
> Small Businesses—All working parents employed by firms with <500 employees.
> Large Firms—At least one parent employed at a firm with ≥ 500 employees.

In the above categories children in the small-group category are also members of the small-business category.

The above methodology produces the final specification used for the analysis:

$$\text{Coverage}_j = \alpha + \beta_{1j}\text{Pred\_eligibility} + \beta_{2j}\text{X} + \beta_{3j}\text{State} + \beta_{4j}\text{Year} + \varepsilon_j \quad (2)$$

where Coverage_j represents coverage type (uninsured, public, any private, dual coverage) in group j (where j = small group, small business, or large firm). Table 1 presents the descriptive statistics for the three market definitions used in the analysis.

Even with state and year dummy variables, unobserved state-specific legislative patterns can still introduce omitted variable bias (also called policy endogeneity in the crowd-out literature) to the estimates in Equation (2). Shore-Sheppard (2005) examined the sensitivity of this Cutler and Gruber approach to various specifications of interaction terms. In our models, specifications that include both Age × Year and State × Age interactions produced no change in the crowd-out estimates. However, including Age × Year interactions reduced the crowd-out estimates to zero. With our smaller sample size in the subpopulation analysis and the limited variation in the instrument over this longer time period (many states changed their eligibility only once), there was insufficient variation in the data to identify the State × Year estimates.

RESULTS

Table 2 shows the change in coverage and public eligibility for dependent children in families where all working parents are employed by firms with fewer than 25 employees (small group), fewer than 500 employees (small businesses), or firms with 500 employees or more (large firms). Very little is known about coverage for children in the small-group market. For children limited to the small-group market, 26 percent are uninsured, compared with 7.0 percent of children whose parents work for firms with more than 500 employees. Not surprisingly, the implementation of SCHIP produced the most dramatic changes in its early years as states made the largest changes in eligibility. The eligibility expansions increased the percent of children eligible for Medicaid and SCHIP (actual percent not predicted percent from the models) in the small group from 20 percent in 1995 to 55 percent in 2000 and 2006. These expansions coincided with the increase in Medicaid coverage to 27 percent in 2000 and 34 percent in 2006 and reductions in the uninsured to 21 percent in 2000 and 2006. Private coverage varied, first increasing from 53 to 56 percent in 2000 and then declining to 49 percent in 2006. In summary,

Table 1: Descriptive Statistics for the Analysis Sample: Dependent Children in Households with at Least One Working Parent, 1995–2006

	Mean	*SD*
Largest firm employing a family member		
Less than 25 employees (small group)	0.205	0.404
Less than 500 employees (small business)	0.453	0.498
500 employees and higher (large firm)	0.516	0.500
Medicaid/SCHIP eligibility	0.347	0.476
Two parent, one worker household	0.224	0.417
One parent, one worker household	0.228	0.419
Any large-firm workers in household	0.514	0.500
Household poverty level 101–200%	0.211	0.408
Household poverty level 201–300%	0.187	0.390
Household poverty level 301–400%	0.146	0.353
Household poverty level >400%	0.291	0.454
Family size	4.061	1.354
Male	0.512	0.500
Black	0.108	0.310
Other race	0.056	0.230
Hispanic	0.178	0.383
Immigrant	0.037	0.190
Urban	0.724	0.447
Age = 1	0.050	0.219
Age = 2	0.052	0.222
Age = 3	0.054	0.225
Age = 4	0.054	0.226
Age = 5	0.055	0.228
Age = 6	0.056	0.230
Age = 7	0.056	0.231
Age = 8	0.057	0.232
Age = 9	0.057	0.233
Age = 10	0.058	0.233
Age = 11	0.058	0.234
Age = 12	0.059	0.236
Age = 13	0.059	0.236
Age = 14	0.058	0.234
Age = 15	0.058	0.233
Age = 16	0.057	0.232
Age = 17	0.056	0.230
Year = 96	0.056	0.231
Year = 97	0.057	0.231
Year = 98	0.057	0.232
Year = 99	0.058	0.233
Year = 00	0.108	0.310
Year = 01	0.107	0.309
Year = 02	0.105	0.306
Year = 03	0.102	0.302
Year = 04	0.100	0.301
Year = 05	0.098	0.297
Year = 06	0.097	0.296
Number of observations	586,600	

SCHIP, State Children's Health Insurance Program.

Source: Authors' estimates from the March Current Population Surveys (1996–2007).

Table 2: Children's Insurance Status and Medicaid/SCHIP Eligibility, by Parents' Firm Size Group, 1995–2006

	Small-Group Market (Less Than 25 Employees) (%)			*Small Businesses (Less Than 500 Employees) (%)*			*Small Businesses (500 Employees and Larger) (%)*		
	1995	*2000*	*2006*	*1995*	*2000*	*2006*	*1995*	*2000*	*2006*
Uninsured	25.6	21.3	20.9	20.0	15.7	16.2	7.0	6.3	5.6
Medicaid/SCHIP	25.3	26.6	33.8	21.2	22.6	29.2	12.3	12.7	17.2
Any private coverage	53.2	55.7	48.6	63.4	65.8	58.6	82.7	82.7	80.6
Both public and private coverage	4.9	4.0	3.9	5.0	4.4	4.4	4.5	4.0	5.0
Medicaid/SCHIP eligibility	20.4	55.1	55.3	16.5	47.8	48.1	7.7	29.9	28.6

SCHIP, State Children's Health Insurance Program.
Source: Authors' estimates from the March Current Population Surveys (1996–2007).

these trends show a large increase in public eligibility across the small-group market. In the early SCHIP years, the increased Medicaid take-up coincides with a similar reduction in the uninsured, but by the later years, changes in Medicaid more closely parallel reductions in private coverage.

Even though firms as large as 500 employees are not typically considered part of the small-group market, the trends for small businesses are closer to those of the small group than large firms. In 1995, 20 percent of children in the small-business category are uninsured, compared with 7.0 percent at the largest firms. The trends observed for the small-group category are also evident for small businesses, but the magnitudes are less dramatic.

Table 3 presents the two-stage least-squares instrumental variables models for children in the small-group category. Columns 1, 3, 5, and 7 present the coefficients for the 2SLS estimates of the outcomes uninsured, Medicaid, any private, and dual coverage while columns 2, 4, 6, and 8 present standard errors for the coefficients. From column 1, the SCHIP expansions produced a net 7.6 percentage point reduction in the uninsured in the small group between 1995 and 2006. This reduction in the uninsured coincided with an 8.3 percentage point increase in Medicaid coverage, or as defined in the crowd-out literature, a take-up rate of 8.3 percent. Even with the large increase in Medicaid coverage, the changes in eligibility only produced a 0.3 percentage point change in small-group private coverage. Similarly, the SCHIP-financed eligibility expansions produced an insignificant (0.7 percentage point) increase in the percent of children reporting both public and private coverage.

Table 3: 2SLS Estimates for Children in the Small-Group Market (All Working Parents Employed at Firms with < 25 Employees)

	Uninsured		*Medicaid/ SCHIP*		*Any Private Coverage*		*Both Public and Private Coverage*	
	Coefficient	*Standard Error*	*Coefficient*	*Standard Error*	*Coefficient*	*Standard Error*	*Coefficient*	*Standard Error*
Public eligibility	−0.076	0.0350**	0.083	0.0347**	0.003	0.0371	0.007	0.0173
Two parent, one worker	0.015	0.0034***	0.015	0.0032***	−0.031	0.0036***	0.003	0.0017*
One parent, one worker	−0.023	0.0043***	0.106	0.0042***	−0.064	0.0046***	0.018	0.0021***
HH poverty level 101–200%	0.004	0.0059	−0.156	0.0062***	0.152	0.0062***	0.001	0.0030
HH poverty level 201–300%	−0.099	0.0248***	−0.260	0.0247***	0.358	0.0265***	−0.001	0.0123
HH poverty level 301–400%	−0.153	0.0306***	−0.311	0.0303***	0.457	0.0325***	−0.008	0.0151
HH poverty level > 400%	−0.197	0.0314***	−0.338	0.0311***	0.518	0.0334***	−0.020	0.0155
Family size	−0.012	0.0012***	0.017	0.0012***	−0.003	0.0012**	0.001	0.0006
Male	0.007	0.0028**	0.006	0.0028**	−0.010	0.0029***	0.003	0.0014**
Black	0.025	0.0062***	0.113	0.0064***	−0.125	0.0064***	0.017	0.0034***
Other race	0.044	0.0070***	0.056	0.0067***	−0.096	0.0075***	0.006	0.0034*
Hispanic	0.125	0.0044***	0.083	0.0044***	−0.219	0.0044***	−0.012	0.0020***
Immigrant	0.211	0.0073***	−0.116	0.0068***	−0.101	0.0062***	−0.010	0.0026***
Urban	−0.019	0.0040***	−0.035	0.0040***	0.040	0.0042***	−0.013	0.0021***
Age = 1	−0.025	0.0091***	−0.007	0.0098	0.042	0.0094***	0.009	0.0048*
Age = 2	−0.016	0.0090*	−0.031	0.0095***	0.047	0.0092***	0.001	0.0046
Age = 3	−0.002	0.0091	−0.046	0.0095***	0.052	0.0093***	0.003	0.0047
Age = 4	0.002	0.0092	−0.050	0.0096***	0.050	0.0093***	0.002	0.0045
Age = 5	0.010	0.0090	−0.060	0.0093***	0.052	0.0092***	0.003	0.0046
Age = 6	−0.004	0.0100	−0.066	0.0104***	0.067	0.0104***	−0.002	0.0050
Age = 7	0.008	0.0100	−0.082	0.0103***	0.074	0.0103***	0.000	0.0050
Age = 8	0.010	0.0100	−0.071	0.0103***	0.061	0.0103***	0.000	0.0050
Age = 9	0.007	0.0101	−0.082	0.0103***	0.077	0.0104***	0.003	0.0051
Age = 10	0.007	0.0101	−0.078	0.0103***	0.072	0.0104***	0.002	0.0050
Age = 11	0.016	0.0100	−0.080	0.0102***	0.063	0.0103***	0.000	0.0049
Age = 12	0.022	0.0100**	−0.085	0.0100***	0.069	0.0103***	0.006	0.0051
Age = 13	0.037	0.0103***	−0.103	0.0101***	0.064	0.0104***	0.000	0.0049
Age = 14	0.024	0.0101**	−0.108	0.0101***	0.079	0.0104***	−0.006	0.0048
Age = 15	0.040	0.0101***	−0.113	0.0100***	0.064	0.0105***	−0.006	0.0048
Age = 16	0.050	0.0101***	−0.127	0.0099***	0.064	0.0104***	−0.010	0.0046**
Age = 17	0.052	0.0102***	−0.142	0.0099***	0.079	0.0104***	−0.009	0.0047*
Year = 96	0.007	0.0081	−0.013	0.0075*	−0.002	0.0082	−0.010	0.0042**
Year = 97	0.018	0.0083**	−0.014	0.0077*	−0.015	0.0083*	−0.012	0.0042***
Year = 98	0.032	0.0141**	−0.046	0.0133***	0.000	0.0147	−0.015	0.0072**
Year = 99	0.004	0.0155	−0.033	0.0151*	0.014	0.0163	−0.018	0.0078**
Year = 00	−0.010	0.0156	−0.003	0.0153	0.007	0.0165	−0.009	0.0079
Year = 01	−0.029	0.0158*	0.024	0.0156	−0.001	0.0168	−0.009	0.0081
Year = 02	−0.023	0.0158	0.036	0.0156**	−0.021	0.0167	−0.009	0.0081
Year = 03	−0.032	0.0155**	0.058	0.0154***	−0.027	0.0165	−0.003	0.0080

continued

Table 3. *Continued*

	Uninsured		*Medicaid/ SCHIP*		*Any Private Coverage*		*Both Public and Private Coverage*	
	Coefficient	*Standard Error*	*Coefficient*	*Standard Error*	*Coefficient*	*Standard Error*	*Coefficient*	*Standard Error*
Year = 04	−0.045	0.0156***	0.053	0.0154***	−0.014	0.0165	−0.007	0.0080
Year = 05	−0.038	0.0156**	0.059	0.0155***	−0.025	0.0166	−0.004	0.0080
Year = 06	−0.022	0.0158	0.071	0.0157***	−0.058	0.0167***	−0.009	0.0081
Constant	0.317	0.0278***	0.380	0.0280***	0.332	0.0299***	0.041	0.0139***
Number of observations	120,130		120,130		120,130		120,130	
R^2	0.091		0.222		0.294		0.013	

***$p<.01$.

**$p<.05$.

*$p<.10$.

SCHIP, State Children's Health Insurance Program.

Source: Authors' estimates from the March Current Population Surveys (1996–2007).

In addition to the eligibility coefficients, several results from the 2SLS estimates merit mentioning. The first stage (available as an supporting information, Appendix SA2) for the 2SLS model predicted the endogenous eligibility variable well, with the instrument, simulated SCHIP, and Medicaid eligibility having a coefficient of 0.92 and a p-value of .01, and the full first stage regression having an adjusted R^2 of 0.72. Also of interest is the degree to which the 2SLS estimates differ from OLS, and in this case, the difference proved substantial. While the 2SLS estimates found a 7.6 percent point reduction in the uninsured, OLS produced a smaller 2.9 percent reduction. The Medicaid uptake estimates were similar with 7.5 percent for OLS and 8.3 percent for 2SLS. The private coverage estimates also differed, with the 2SLS estimates finding a reduction in private coverage of 0.3 percent, while OLS produced a much larger reduction of 4.2 percent. In summary, not instrumenting for SCHIP and Medicaid eligibility would have produced substantially biased crowd-out estimates.

Table 4 presents the coefficients from the small-group estimates and those for small businesses (less than 500 employees) and large firms (500 employees and above). With these coefficients, we can estimate SCHIP's crowding out of private coverage across the groups. The large change in the dual-coverage category (both public and private) at large firms requires apportioning the dual covered for the crowd-out calculations. The first approach looks at the total reduction in the uninsured for an increase in public

Table 4: 2SLS Estimates of SCHIP Eligibility Expansions on Children's Insurance Coverage, by Parents' Firm Size Group

	Uninsured (1995–2006)	*Medicaid (1995–2006)*	*Any Private (1995–2006)*	*Dual Coverage (1995–2006)*	*Crowd-out*† *(1995–2006)*	*Crowd-out*‡ *(1995–2006)*
Small group (Fewer than 25 employees)	−0.076** (0.035)	0.083** (0.035)	0.003 (0.037)	0.007 (0.017)	8.7%	5.1%
Small businesses (Fewer than 500 employees)	−0.061*** (0.019)	0.105*** (0.020)	−0.044** (0.022)	0.003 (0.011)	41.6%	43.3%
Large firms (500 employees and larger)	−0.026 (0.016)	0.095*** (0.020)	−0.035 (0.021)	0.051*** (0.014)	72.5%	59.0%

Notes. Standard errors in parentheses.

†Defined as $(1 - \Delta Unins/\Delta Mcd)$.

‡Defined as $(\Delta Pvt - \Delta Dual/\Delta Mcd + \Delta Dual)$.

***$p < .01$.

**$p < .05$.

SCHIP, State Children's Health Insurance Program.

Source: Authors' estimates from the March Current Population Surveys (1996–2007).

coverage and calculates crowd-out as $(1 - \Delta Unins/\Delta Mcd)$ one minus the change in the uninsured (the coefficient on predicted eligibility from the uninsured equation) divided by the change in Medicaid coverage (the predicted eligibility coefficient in the Medicaid equation). This approach produces the highest crowd-out estimates and is the most conservative from a cost perspective. It assumes that any increase in Medicaid enrollment that is not accompanied by a reduction in the uninsured is a reduction in private coverage. The second approach averages the dual-coverage groups by calculating crowd-out as $(\Delta Pvt - \Delta Dual/\Delta Mcd + \Delta Dual)$ (Cutler and Gruber 1996). Although not used in this paper, another alternative is to constrain the coefficients on the insured categories to sum to 100 percent in a three-stage least squares (3SLS) estimator. This 3SLS approach drops the dual category and collapses the crowd-out calculation to $(\Delta Pvt/\Delta Mcd)$, the change in private coverage divided by the change in public coverage. Due to the large changes in the dual category and the differences in magnitude between the two approaches presented in Table 4, we do not use the constraints of the 3SLS

estimator and retain the dual coverage outcome. For the discussion that follows, we focus on the more conservative, first approach.

Independent of the definition used, crowd-out in the small group market from the SCHIP expansions was low. From 1995 to 2006, the 8.3 percent point Medicaid increase and 7.6 percent point reduction in the uninsured implies crowd-out of 8.7 percent (1–7.6/8.3). Alternatively, the second definition incorporating dual coverage produces a crowd-out estimate of 5.1 percent ((0.3 percent–0.7 percent)/(−8.3 percent+0.7 percent) = 5.1 percent). For small businesses, the two approaches produce similar crowd-out estimates of 41.6 percent and 43.3 percent. Large firms experience the highest crowd-out, at 72.5 percent and 59.0 percent.

DISCUSSION

Previous econometric crowd-out studies have focused on estimating the magnitude of the crowd-out effect. The magnitude of this effect is important to policy makers for estimating the cost of proposed public insurance expansions. Previous studies have found total crowd-out estimates as high as 50 percent (Cutler and Gruber 1996; LoSasso and Buchmueller 2004; Hudson et al. 2005), although most studies find lower total crowd-out estimates (Dubay and Kenney 1996; Thorpe and Florence 1998; Ham and Shore-Sheppard 2005; Shore-Sheppard 2005) depending on data source and methodology used. However, we show that SCHIP's crowding-out of private coverage for children varies widely depending on the size of the firm where the parent is employed. For children with parents employed by the smallest firms composing the small group market (less than 25 here), the SCHIP expansions produced little (7.6 percent) crowd-out of private coverage. We find crowd-out increasing with firm size. The SCHIP expansions produce more crowd-out (42 percent) for children with parents employed by small businesses (up to 500 employees) and the highest crowd-out (59–73 percent) for large firms (over 500 employees). Our estimate for large firms is higher than most estimates in the literature due to the fact that other studies examine all children, while our study excludes unemployed households.

The variability of crowd-out by firm size can allow states to tailor their efforts to prevent crowd-out. Authors frequently cite that two-thirds of uninsured children are SCHIP or Medicaid eligible (Sommers 2007). Policies designed to facilitate the enrollment of these children have to be balanced by the statutory requirement that states minimize crowd-out. Our results indicate

that states desiring to increase SCHIP enrollment without increasing crowd-out can consider waiving waiting periods and other policies designed to minimize crowd-out for children in households employed by the smallest firms (less than 25 employees in this study).

The cross-sectional nature of the data imposes a key limitation on the study. The CPS does not collect information on the timing and duration of insurance coverage so we cannot directly identify specific cases of crowd-out where eligible children drop their private insurance to take-up their public option. Rather than direct identification, we rely on variation between states to identify crowd-out. This interstate variation allows us to test our key hypothesis that crowd-out varies with firm size.

CONCLUSIONS

This paper is the first to examine crowd-out for dependent coverage in the small group market, at small businesses, and at large firms. We find that SCHIP has had a substantial impact on coverage in the small group market with only modest evidence of crowd-out. Between 1995 and 2006, the SCHIP financed eligibility expansions have reduced the share of uninsured children by 7.6 percent points. Compared with the pre-SCHIP uninsured rate of 26 percent in this group of children for 1995, this reduction indicates that SCHIP decreased the number of uninsured children by as much as 29 percent in the small group market. This reduction in the uninsured required an increase in Medicaid enrollment of 8.3 percent, implying a maximum public–private crowd-out of 8.7 percent. SCHIP produced a similar 6.7 percent point reduction in uninsured children across all small businesses, but at a higher cost in private coverage with a crowd-out rate of 41.6 percent. In contrast to the negligible crowd-out in the small group market, families at large firms experienced only a weakly significant 3.5 percent point reduction in uninsured children with a total crowd-out of 49 percent, on par with the 50 percent crowd-out frequently seen in the literature.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix

Appendix SA2: First Stage for 2SLS Estimates for Children in the Small-Group Market (all working parents employed at firms with <25 employees)

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