MACROECONOMIC CONDITIONS, HEALTH CARE COSTS
AND THE DISTRIBUTION OF HEALTH INSURANCE

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ABSTRACT

Prior studies have examined the relationship between macroeconomic factors and health insurance for the adult population and have evaluated changes in the composition of health insurance across the income distribution. We combine these types of analysis and examine how labor market fluctuations, health care costs, income, and economic structure are related to the distribution of health insurance coverage across educational groups. We find that there are substantial differences in how these factors affect insurance coverage for different groups. Variations in unemployment are more important in determining insurance coverage for more educated people. The price of medical care, by contrast, is a much more important determinant of private coverage for the least educated than for the most educated. This finding is consistent with differences in the valuation of cost-increasing health care technologies across education groups.

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Recent research has documented that most of the secular change in health insurance coverage can be attributed to higher health care costs (Chernew, Cutler, and Keenan 2002). Likewise, much of the cyclical variation in coverage is related to changing economic conditions (Cawley and Simon, 2003). Changes in the structure of the economy and expansions of public programs also affect rates of private coverage (Cutler and Gruber, 1996; Dubay and Kenney, 1997).

A second strand of research focuses on the changing distribution of coverage. Overall health insurance coverage has declined over the past twenty years, but this decline in coverage has not been evenly distributed. Most of the decline has been concentrated among lower income adults (Holahan and Pohl 2002). In this paper, we examine the factors that prior research has concluded affect overall coverage and assess how they affect the distribution of health insurance coverage. This distributional analysis can provide an indication of where the risks of future gaps in coverage are likely to be greatest. As we discuss further below, it can also inform our understanding of the fundamental determinants of insurance coverage.

The first part of this paper reviews the empirical and theoretical literature on the determinants of health insurance coverage. In the second part, we describe our data. In the third part, we report results of empirical analyses examining how private health insurance coverage of the non-elderly adult population changed over the period 1981-2001. In this analysis, we break the non-elderly adult population into four groups defined by educational attainment. Educational attainment provides a good indicator for distributional analysis over time because it is highly correlated with income[1], but does not

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[1] For example, 6% of college-educated workers were below the federal poverty level (FPL), while 32% of working age adults without high school diplomas had incomes below FPL.

vary with fluctuations in economic conditions. By examining education groups, we can follow similar individuals over time. We also evaluate the extent to which public insurance coverage compensates for secular and cyclical changes in private coverage for each of these educational groups. The final section concludes.

1.   Background

Four types of factors have been shown to affect individual and aggregate levels of insurance coverage: labor market conditions, health care costs, the structure of the economy, and the availability of public coverage.

Labor market fluctuations – changes in unemployment and labor force participation rates – can affect private health insurance coverage for two reasons. First, because of the favorable tax treatment of employment-based health insurance, people who lose a connection to the labor market face an increase in the price of health insurance. This increase in price is greatest for high-income workers, who face the highest marginal tax rates[2].

Second, poor labor market conditions are also associated with declines in income. A decline in income may make health insurance coverage either more or less valuable. Lower income means that people have more difficulty bearing the financial risks associated with lack of coverage. Alternatively, lower income may reduce the demand for health care, and hence for health insurance that is associated with a particular quantity of health care. In either scenario, we would expect the effects on private insurance of

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[2] In dual earner families, where both earners have access to coverage, job loss may not lead to loss of tax benefits, because coverage can be switched to the employed spouse. This dual earner effect will mitigate the marginal tax rate effect, because higher income workers are more likely to have spouses with health insurance. In 2002, among workers with health insurance (of any type), 33% of college educated workers, 28% of some college, 25% of high school, and 14% of less than high school had a spouse with coverage through their own employer.

declines in income associated with poor economic conditions to be greatest for lower income groups.

Poor labor market conditions may also affect public coverage, offsetting some of the private coverage effects. Reductions in income associated with job loss (or a weak labor market) may push some people below the income thresholds of existing public insurance programs (Autor and Duggan, 2003). Job loss may also affect categorical eligibility for public insurance programs. Beginning in 1991, families with unemployed parents became eligible for Medicaid benefits under the Aid to Family with Dependent Children (AFDC) Unemployed Parent Program (UP), extending similar programs that had existed in several states (Winkler 1993).

Prior empirical research suggests that declines in labor market conditions are associated with overall reductions in insurance coverage. In one recent study using individual data, Cawley and Simon find that a "10% increase in local unemployment rate is associated with a 3.1% increase in the probability that an adult individual lacks health insurance, controlling for a number of other factors" (2002). Gruber and Levitt, using state level data, report that a one percentage-point increase in unemployment is associated with 1.2 million more uninsured people, about a 0.5 percentage point increase in the uninsurance rate (Gruber and Levitt 2002). Gruber and Madrian study the interrelationship between employment separation and insurance coverage at the individual level and conclude that employment separation is associated with less insurance coverage and that the relationship grows stronger as the period of unemployment lengthens (1997). Other studies focus on the role of family income in

coverage. Acs shows that falling family incomes explain most of the decline in insurance coverage between 1988 and 1991 (1995).

The theoretical relationship between the price of health insurance and the quantity of insurance demanded depends on the source of price increases. If the loading factor for health insurance increases – that is, the price of health insurance increases more than underlying health care costs – private insurance coverage is expected to fall, because purchasing health care directly becomes relatively less costly than purchasing insurance. Likewise, increases in moral hazard under insurance would be expected to lead to declines in insurance coverage. Most increases in the cost of health insurance, however, are not due to changes in the insurance market but rather to increases in the underlying cost of health care. These increases, in turn, are principally driven by improvements in health care technology. The interrelationships between technological change, health care costs, and the price of health insurance complicate the question of how higher health insurance prices might affect private coverage.

If people could select the package of health care technologies that they wished to cover under their health insurance contract, then increases in the cost of health care related to greater availability of technologies would never be expected to lead to decreases in insurance coverage. Faced with new costly technologies, people could choose not to purchase them (or insurance that would cover them), in which case the increase in costs would have no effect on insurance coverage. Alternatively, people might fully value these technologies, in which case they would demand more health insurance in the face of rising costs so that the technologies were available to them when needed (Nyman 1999). Since new health care technologies are likely to be a normal

good, we would expect to see increases in the cost of care associated with more insurance coverage among higher income groups and with stable coverage among lower income groups.

In reality, health insurance coverage packages do not vary greatly in the technologies they cover. People are rarely able to decline coverage for specific new technologies (it is not clear that it would be desirable to allow them to do so). Instead, when technologies improve, people must choose between purchasing the coverage package that is available and declining coverage altogether. If they decline coverage, they will implicitly purchase a lower quantity of health care (uninsured people use about half as much care as do the insured). In this scenario, higher health care costs associated with new technologies may lead to declining health insurance coverage, as coverage is no longer worth its full price. Such declines in coverage associated with higher prices are likely to be greatest in lower income groups if higher income groups place a relatively greater value on new technologies.

Higher health care costs may lead some people who were already eligible for public coverage to substitute public coverage for private coverage. Thus, higher health costs may increase the level of crowd-out induced by existing public insurance program. Higher health costs might also lead to cutbacks in public programs, reducing eligibility for these programs.

The empirical literature suggests that rising health care costs are associated with reductions in insurance coverage. Kronick and Gilmer demonstrate that the decline in health insurance coverage over time is correlated with an increase in the proportion of income spent on health care (1999). Fronstin suggests that while unemployment may

play some part in health insurance coverage, declining real wages, changing working hours and increasing health care costs are perhaps more important (1996).

Changes in the structure of the economy, including industries of employment, firm size of employment, and unionization, may affect insurance coverage for several reasons. Industrial composition could affect coverage if employment patterns (such as full time work, job tenure, and hours of work) vary by industry. Industries with more stable, full-time, employment are likely to face lower administrative costs of insurance than those that employ short-term part-time workers. Larger firms face much lower administrative costs of health insurance than do small firms. Moving from larger toward smaller firms, then, would be expected to reduce private coverage rates. Finally, unionization may change the tradeoffs workers are willing to make between higher wages and better benefits in favor of benefits (Freeman and Medoff, 1984). Unionization may also affect the generosity of public insurance coverage.

Prior research suggests that changes in the structure of the economy explain relatively little of the change in insurance coverage over time (Glied and Stabile 2000, Acs, 1995). Marquis and Long (2002) show that greater unionization, lower unemployment, and more large firms in the local market were associated with higher levels of employer-sponsored health insurance in 1993 and 1997. The effect of industrial structure may have lessened over time because the manufacturing sector experienced greater relative reductions in employer-sponsored health insurance coverage than other sectors since 1979 (Medoff et al, 2001). Similarly, analysts contend that small firm employees are less likely to have health insurance coverage (Mills 2002). Small firm

employees may also be less likely to maintain coverage after a layoff because they are not subject to COBRA (Lambrew, 2001).

Finally, the availability of public insurance might affect both private and public coverage rates. Broader eligibility for public insurance should lead to increases in the proportion of the population with public coverage. Broader public coverage availability, however, might lead to substitution of public coverage for private coverage. The extent of such crowd-out is likely to depend on the extent to which a group is eligible for public coverage and the degree to which they currently hold private coverage. Thus, we expect public coverage to have its largest effects on near-poor groups, who have higher rates of private coverage than do very low income people, but who may be made eligible for public coverage through a program expansion.

II. Data and Methods

Prior research on the factors affecting health insurance coverage has tended to examine either costs or economic conditions (but not both) and has rarely examined the distribution of effects across groups. In our data, health care costs and unemployment rates are negatively correlated, with a simple correlation of –0.46. In the recent past, however, both unemployment rates and health care costs have increased. This high correlation and changing pattern suggests that examining both economic conditions and costs simultaneously would be valuable.

Our analysis focuses on state-level data, rather than person-level data. We do this for several reasons. First, information about health care costs and industrial composition is only available at the state level. Second, at the person-level, the effect of the loss of

employment on insurance coverage varies – newly unemployed people may lose

coverage or remain insured through COBRA, spousal coverage, the purchase of non-

group coverage, or qualification for public insurance. But an increase in unemployment

in a community can affect the health insurance both of those who are unemployed and

those who are not. Employers may reduce benefits or increase employee premium shares

when the unemployment level rises and generous benefits are no longer necessary to

attract and retain employees. State-level data allow us to account for both types of

effects.

We used the CPS March Annual Demographic File 1981-2002 for our

calculations (UNICON, 2002). Using these data, we estimated private, public, and overall

insurance coverage rates and unemployment rates for each state and year and for each

educational group. We also created a set of variables reflecting state characteristics.

These characteristics include labor force participation, mean income, average age,

proportion of the population at each education level, percent with jobs in the

manufacturing industry, and union membership. When available, we also included

information on the percentage of workers in firms with fewer than 25 employees[3].

We use a proxy measure of health care costs based on Medicare payments. We

use Medicare expenditure on hospital, physician and other providers per enrollee --

essentially Medicare parts A and B without home health care – as a state-level measure of

health care costs.   We use a Medicare-based measure of costs, rather than per capita state

health spending, because Medicare spending is not greatly affected by changes in demand

that may result from an economic downturn or declining health insurance coverage.

Excluding home health care more accurately reflects expected health care costs for

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[3] . Data on firm size first appeared in the 1988 CPS release (for data year 1987).

working age adults (Chernew, Cutler, and Keenan 2002). The correlation between this

Medicare measure and state health care costs per capita was 0.7. We computed the

Medicare proxy using data on the CMS website[4]. The health care cost measure is

adjusted to real dollars using the all item CPI.

We created a dummy variable to describe whether states were generous Medicaid

states based on whether they were above median income-based eligibility in each year.

Much of this information for the 1990s was available through National Governors'

Association reports (1991-2000). For the 1980s, we used Medicaid need standard for

1984 (HCFA 1984). For the most recent year, we used the Kaiser database on state

Medicaid facts (2003). We also added a dummy variable for whether a state had AFDC-

UP in each particular year. AFDC-UP information was available from Winkler (1993).

Appendix Table 1 shows the national averages of selected variables overall and for each

education level.

We next estimated multivariate regressions of the effect of these factors on the

percentage of the population with private insurance. We ran the regressions for the

overall non-elderly adult population and for those at each of 4 education levels. We

control for non-varying state-specific characteristics using fixed effects and for changes

in the CPS questionnaire over time using two dummy variables[5]. We weighted the

regressions according to the population in each state (but weighting did not substantially

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[4] The Medicare cost measure reflects changes in underlying health care costs and does not account for changes in loading. Medicare and private insurance spending patterns diverged during the 1990s. To capture this divergence in forecasts, we adjust state-level Medicare spending by the ratio of national private insurance expenditures per enrollee divided by Medicare expenditures per beneficiary. This adjustment slightly increases our predicted uninsurance rate for 2003 but does not greatly affect our parameter estimates. We computed the ratio of private expenditures per enrollee to Medicare expenditures per beneficiary using national health accounts data on spending, CMS data on Medicare participation, and HIAA data on private insurance enrollment (CMS 2003a, Health Insurance Association of America 2002).
[5] The addition of year fixed effects did not substantially alter the results reported here.

affect our results). A second regression model was created with the small firm variable included for the years 1987-2001.

III. Results

Private Coverage

Figure 1 shows predicted and actual private insurance coverage rates from our model for the period 1981-2001. As the figure suggests, our simple model accounts for much of the variation over time in private insurance coverage. Tables 1-2 shows the coefficient estimates from our analysis of private coverage for the overall non-elderly adult population and each education group. The first table shows the results excluding small firms 1980-2001. The second table includes small firm composition for 1987-2001.

Weak economic conditions are associated with reductions in private coverage for all education groups. A 1-percentage point increase in the group-specific unemployment rate is associated with a 0.13 percentage point decline in private coverage for people with less than a high school diploma, a 0.34-percentage point decrease in the private insurance coverage rate of high school graduates, a 0.32-percentage point decrease for people with some college education, and a 0.36-percentage point decrease for college graduates. The much smaller impact of higher unemployment in the lowest education group is consistent with the lower initial prevalence of private coverage in this group. Poorly educated job losers are more likely to be losing a job that never included health insurance.

Our results also support the hypothesis that rising health care costs are associated with less insurance coverage. A 10% increase in health care costs is associated with a

0.88-percentage point decrease in health insurance coverage overall. As expected, the relationship between higher health care costs and lower private coverage rates declines monotonically in education. The effect of a 1% increase in health care costs on private insurance coverage is more than 4 times as large for people with less than a high school diploma as it is for college graduates. Even for the most educated group in our sample, however, increases in health care costs are associated with reductions in private insurance coverage.

Our results similarly suggest that the effect of income on health insurance coverage is decreasing in education level. As we had expected, reductions in income in the highest income groups have little effect on coverage, since the value of financial protection is likely to increase with decreases in income. A 10-percentage point decline in income is associated with a 1.1-percentage point decline in private insurance coverage for the lowest education level, a 0.62 percentage point decline for high school diploma holders, a 0.51-percentage point decline for people with some college, and a 0.26-percentage point decline for college graduates. Overall, a 10-percentage point decline in average income is related to a 1.8-percentage point decline in private insurance coverage.

We repeated our analysis using the health care cost to income ratio, rather than log income and log heath care costs in the regressions (not reported). Like Kronick and Gilmer, we found that the health care cost to income ratio has a positive significant effect on lack of health care insurance (1999). The magnitude of this effect was greatest for the lowest education group and weakened as education increased. A 10-percentage point increase in the health care cost to income ratio was associated with a 0.4-percentage point reduction in insurance coverage for college graduates, a 0.8-percentage point reduction

for people with some college, a 1.3-percentage point reduction for high school graduates, and a 1.7-percentage point reduction for the lowest education level.

Among the state characteristics we considered, the size of the manufacturing sector was most clearly related to insurance. We found that larger manufacturing sectors are sizably and significantly related to higher rates of insurance coverage for people without any college education. Overall, a 10-percentage point decrease in the size of the manufacturing sector is linked to a 1.6 percent decrease in private insurance coverage. The effect was largest for those with a high school diploma, where a 10-percentage point decrease in the size of the manufacturing sector is associated with a 5.1 percentage point decrease in private insurance coverage. For college graduates we found a 10 percentage point increase in the size of the manufacturing sector is associated with a 1.2 percentage point decrease in private insurance coverage, but the effect was not significant.

Union membership also had an impact on private insurance coverage. Overall, a 10-percentage point increase in union membership is associated with a 1.3 percentage point increase in private insurance coverage. By education level, the unionization was significant for those with at least some college education. Among people with some college education, a 10-percentage point increase in union membership is connected to a 1.8 percentage point increase in private insurance coverage. For college graduates, a 10-percentage point increase in union membership is related to a 3.75 percentage point increase in private insurance coverage.

Table 2 shows the results of our analysis when adding a variable for small firms. In analyses of data from 1987 on, we found that the percent of workers in the state who work in firms of 25 or fewer employees decreased private insurance coverage for

everyone although the effect was only significant for those without a high school diploma. Overall, a 1-percentage point increase in the portion of workers in small firms decreased private insurance coverage by 0.09-percentage point. For people without a high school diploma, a 1-percentage point increase of workers in smaller firms is associated with a 0.22 percentage point decrease in private coverage. When the small firms variable were added to the regressions, the relationship between private insurance and the size of the manufacturing sector decreased slightly in magnitude and significance.

Table 3 presents the regression coefficients for private insurance when the Medicaid variables are added. The generosity of state Medicaid program eligibility had little effect on private insurance coverage. For poorly educated workers, however, we found some evidence of crowd-out. In states with more generous Medicaid programs, the percentage of workers with less than a high school diploma who held private insurance was .01 lower than in less generous states. This effect is comparable to the effect of a 7% increase in health care costs.

Public Insurance Coverage

We next repeat these analyses examining variation in public insurance coverage rates. As Figure 2 shows, the predictive power of our model is much less strong for public coverage than for private coverage. This is not surprising. Changes in public coverage are in large measure a consequence of legislative and regulatory decisions that are not captured by our model. During the 1980s, the Medicaid program underwent a tremendous expansion in eligibility (see Currie and Grogger (2002) and Currie and Gruber (1994)). Currently, State governments are facing very large budget deficits. In

consequence, nearly every state has implemented or proposed for the current year budget cuts in Medicaid programs either through eligibility rollbacks, limiting or eliminating certain benefits, or increased enrollee cost-sharing (Kaiser Commission 2003).

Table 4 reports coefficients from models examining public insurance coverage as the dependent variable. We found a positive correlation between unemployment and public insurance coverage. This relationship declines in magnitude as education increases and is not statistically significant for the college graduates. Among people without a high school diploma, a 1-percentage point increase in unemployment is associated with a 0.14- percentage point increase in public insurance coverage. The offsetting effect of public coverage for this very poor population is so large that unemployment has no net effect on insurance coverage for this group. For more highly educated groups, however, increases in public coverage do not approach the magnitude of declines in private coverage associated with unemployment.

Higher health care costs are associated with more public coverage, particularly among less educated groups. The magnitude of the effect of costs on public coverage is about 1/2 as large as the effect on private coverage. Since increases in the cost of coverage affect take-up of public coverage but not eligibility for such coverage, this finding suggests that higher health care costs induce a modest amount of crowd-out.

Overall, increases in income reduce participation in public insurance. However the effect is not significant at the education group level. Changes in income do not affect public insurance coverage in the higher income groups.

The size of the state's service sectors and union membership had some impact on public insurance coverage, although these effects were not significant overall. For those

without a high school diploma, larger service sectors were associated with more public insurance coverage. A 1 percentage point increase in the size of the state's high wage service sector was associated with a 0.47 percentage point increase in public insurance coverage among people without a high school diploma. A 10% increase in union membership was associated with a 1.25 and 1.07 percentage point decreased in public insurance among those with some college and college graduates, respectively. When we added the percent of the states workers in firms of less than 25 employees to the regression from 1987 on (not displayed), we found that the percent of the state's workers in small firm had no significant effect on public insurance coverage. However, when the small firm variable was added, the relationship between union membership and public insurance became stronger and significant.

Table 5 shows the results for public insurance when the Medicaid variables are added. Surprisingly, Medicaid generosity has no significant relationship to public insurance coverage, although the magnitude of the relationship declines with education, as expected. The availability of AFDC-UP does increase public program participation (note that all the variation in this variable occurred before 1991).

In sum, public insurance is somewhat responsive to economic conditions, but much less than private insurance. Health care costs, unemployment, and industry structure have limited relationships with public insurance. Economic conditions have the largest effect on public insurance among the most poorly educated.

IV. Conclusions

Our results suggest that the factors affecting overall insurance coverage operate differently at different points in the income distribution. More highly educated workers are most affected by cyclical changes in the unemployment rate, but are less affected by increases in price or decreases in income. Conversely, the least educated workers are not as strongly affected by changes in unemployment rates because they are less likely to have jobs with health insurance at all.

We find that rising health care costs reduce coverage even among the most educated workers, but the effect for highly educated workers is quite small. The effect of a given increase in health care costs on private coverage is more than 4 times as high among workers with less than high school employment than it is among college educated workers. We find modest crowd-out of private health insurance among the least educated groups as health care costs rise.

This pattern of results is consistent with the hypothesis that improvements in health care technologies that lead to price increases are most highly valued by high-income people. The willingness to pay for new technologies may vary across the population.

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Table 1: Private Insurance Coverage, fixed effect (state) regressions for 1981-2001 (standard errors in parentheses with p<0.05 = ~, p<0.01 = *)

Private insurance

	Overall	Less than HS	HS Grads	Some College	College Grads
Unemployment	-0.147*	-0.128*	-0.344*	-0.318*	-0.364*
	(0.055)	(0.046)	(0.056)	(0.058)	(0.112)
Health care costs (log)	-0.088*	-0.174*	-0.093*	-0.061*	-0.040~
	(0.010)	(0.021)	(0.015)	(0.011)	(0.018)
Labor force non-participation	-0.277*	-0.282*	-0.120~	-0.174*	-0.255*
	(0.069)	(0.045)	(0.050)	(0.042)	(0.049)
Income (log)	0.176*	0.109*	0.062*	0.051*	0.026~
	(0.016)	(0.017)	(0.017)	(0.010)	(0.013)
Manufacturing sector (% of workers in this sector)	0.160~	0.509*	0.380*	0.120	0.123
	(0.073)	(0.131)	(0.085)	(0.070)	(0.089)
High wage service (% of workers in this sector)	-0.039	-0.021	0.182~	0.091	-0.007
	(0.071)	(0.121)	(0.085)	(0.058)	(0.105)
Low wage service (% of workers in this sector)	-0.121	-0.246	-0.024	0.067	0.125
	(0.065)	(0.127)	(0.081)	(0.065)	(0.104)
Union Membership	0.130	0.158	0.065	0.185~	0.375~
	(0.086)	(0.209)	(0.132)	(0.091)	(0.165)
R2	0.914	0.856	0.86	0.786	0.499

Regressions also include average age and dummy variables for CPS question changes. The "overall" regression also controls for the size of the education groups.

Table 2: Private Insurance Coverage, fixed effect (state) regressions for 1987-2001, small firm variables included

(standard errors in parentheses with p<0.05 = ~, p<0.01 = *)

Private Insurance

	Overall	Less than HS	HS Grads	Some College	College Grads
Unemployment	-0.263*	-0.124~	-0.338*	-0.427*	-0.347~
	(0.077)	(0.054)	(0.074)	(0.078)	(0.142)
Health care costs (log)	-0.058*	-0.245*	-0.061*	-0.074*	-0.058~
	(0.016)	(0.033)	(0.022)	(0.023)	(0.028)
Labor force non-participation	-0.150	-0.272*	-0.056	-0.114~	-0.206*
	(0.090)	(0.057)	(0.048)	(0.053)	(0.065)
Income (log)	0.146*	0.110*	0.044~	0.044*	0.039~
	(0.022)	(0.018)	(0.018)	(0.015)	(0.017)
Manufacturing sector (% of workers in this sector)	0.143	0.479*	0.420*	0.149	0.127
	(0.092)	(0.169)	(0.114)	(0.102)	(0.130)
High wage service (% of workers in this sector)	-0.019	-0.020	0.126	0.070	-0.070
	(0.082)	(0.144)	(0.098)	(0.077)	(0.131)
Low wage service (% of workers in this sector)	-0.069	-0.263	0.001	0.150	0.087
	(0.079)	(0.167)	(0.095)	(0.091)	(0.135)
Small firms	-0.085	-0.216~	-0.085	-0.103	-0.084
	(0.052)	(0.107)	(0.071)	(0.065)	(0.087)
Union membership	0.668*	1.208~	0.475	0.528~	0.561
	(0.188)	(0.485)	(0.262)	(0.223)	(0.337)
R2	0.930	0.843	0.886	0.803	0.497

Regressions also include average age and dummy variables for CPS question changes. The "overall" regression also controls for the size of the education groups.

Table 3: Private Insurance Coverage, fixed effect (state) regressions for 1981-2001, Medicaid Policy Variables included

(standard errors in parentheses with p<0.05 = ~, p<0.01 = *)

Private Insurance

	Overall	Less than HS	HS Grads	Some College	College Grads
Unemployment	-0.147*	-0.121*	-0.402*	-0.311*	-0.302*
	(0.054)	(0.045)	(0.054)	(0.057)	(0.106)
Health care costs (log)	-0.087*	-0.169*	-0.084*	-0.061*	-0.036~
	(0.010)	(0.021)	(0.015)	(0.011)	(0.018)
Labor force non-participation	-0.275*	-0.266*	-0.125~	-0.169*	-0.252*
	(0.069)	(0.045)	(0.050)	(0.043)	(0.049)
Income (log)	0.174*	0.117*	0.049*	0.050*	0.022
	(0.016)	(0.017)	(0.016)	(0.010)	(0.013)
Manufacturing sector (% of workers in this sector)	0.164~	0.561*	0.425*	0.112	0.119
	(0.071)	(0.127)	(0.086)	(0.070)	(0.091)
High wage service (% of workers in this sector)	-0.038	-0.043	0.091	0.112	0.065
	(0.071)	(0.117)	(0.087)	(0.057)	(0.099)
Low wage service (% of workers in this sector)	-0.121	-0.244	-0.022	0.070	0.137
	(0.065)	(0.125)	(0.083)	(0.065)	(0.105)
Union membership	0.128	0.136	0.057	0.189~	0.365~
	(0.087)	(0.210)	(0.137)	(0.091)	(0.164)
Medicaid generosity	0.000	-0.012*	-0.001	0.001	0.004
	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)
AFDCUP	-0.001	-0.007	-0.012*	0.002	0.003
	(0.003)	(0.006)	(0.004)	(0.003)	(0.004)
R2	0.914	0.858	0.856	0.786	0.494

Regressions also include average age and dummy variables for CPS question changes. The "overall" regression also controls for the size of the education groups.

Table 4: Public insurance, fixed effect (state) regressions for 1981-2001

(standard errors in parentheses with p<0.05 = ~, p<0.01 = *)

Public Insurance

	Overall	Less than HS	HS Grads	Some College	College Grads
Unemployment	0.020	0.141*	0.091*	0.082*	0.039
	(0.028)	(0.031)	(0.026)	(0.021)	(0.037)
Health care costs (log)	0.023*	0.033~	0.025*	0.019*	0.015*
	(0.006)	(0.015)	(0.007)	(0.005)	(0.005)
Labor force non-participation	0.129*	0.493*	0.109*	0.013	0.057*
	(0.036)	(0.034)	(0.027)	(0.017)	(0.017)
Income (log)	-0.071*	-0.014	-0.003	-0.004	-0.002
	(0.008)	(0.013)	(0.008)	(0.004)	(0.004)
Manufacturing sector (% of workers in this sector)	-0.029	0.125	-0.089	-0.051	0.019
	(0.035)	(0.086)	(0.046)	(0.027)	(0.030)
High wage service (% of workers in this sector)	0.056	0.471*	-0.011	-0.019	0.032
	(0.037)	(0.099)	(0.046)	(0.028)	(0.032)
Low wage service (% of workers in this sector	0.059	0.297*	0.087	-0.040	0.059
	(0.035)	(0.087)	(0.047)	(0.027)	(0.033)
Union membership	-0.044	0.143	-0.012	-0.125~	-0.107~
	(0.070)	(0.151)	(0.073)	(0.051)	(0.048)
R2	0.797	0.785	0.705	0.657	0.239

Regressions also include average age and dummy variables for CPS question changes. The "overall" regression also controls for the size of the education groups.

Table 5: Public insurance, fixed effect (state) regressions for 1981-2001, Medicaid policy variables included

(standard errors in parentheses with p<0.05 = ~, p<0.01 = *)

Public Insurance

	Overall	Less than HS	HS Grads	Some College	College Grads
Unemployment	0.035	0.122*	0.105*	0.075*	0.028
	(0.027)	(0.031)	(0.025)	(0.021)	(0.035)
Health care costs (log)	0.012~	0.019	0.013	0.012~	0.012~
	(0.006)	(0.015)	(0.007)	(0.005)	(0.005)
Labor force non-participation	0.121*	0.448*	0.109*	0.013	0.057*
	(0.034)	(0.034)	(0.026)	(0.017)	(0.017)
Income (log)	-0.054*	-0.029~	0	0	0
	(0.008)	(0.012)			
Manufacturing sector (% of workers in this sector)	-0.080~	-0.018	-0.143*	-0.071*	0.014
	(0.033)	(0.087)	(0.044)	(0.027)	(0.031)
High wage service (% of workers in this sector)	0.061	0.457*	0.007	-0.033	0.020
	(0.036)	(0.089)	(0.042)	(0.026)	(0.031)
Low wage service (% of workers in this sector)	0.060	0.287*	0.094~	-0.048	0.056
	(0.034)	(0.083)	(0.045)	(0.027)	(0.033)
Union membership	-0.009	0.207	0.022	-0.119~	-0.103~
	(0.067)	(0.147)	(0.070)	(0.050)	(0.048)
Medicaid generosity	0.001	0.004	0.001	0.001	0
	(0.001)	(0.003)	(0.001)	(0.001)	
AFDCUP	0.012*	0.025*	0.015*	0.004*	0.001
	(0.001)	(0.004)	(0.002)	(0.001)	(0.001)
R2	0.817	0.796	0.727	0.663	0.238

Regressions also include average age and dummy variables for CPS question changes.
The "overall" regression also controls for the size of the education groups.

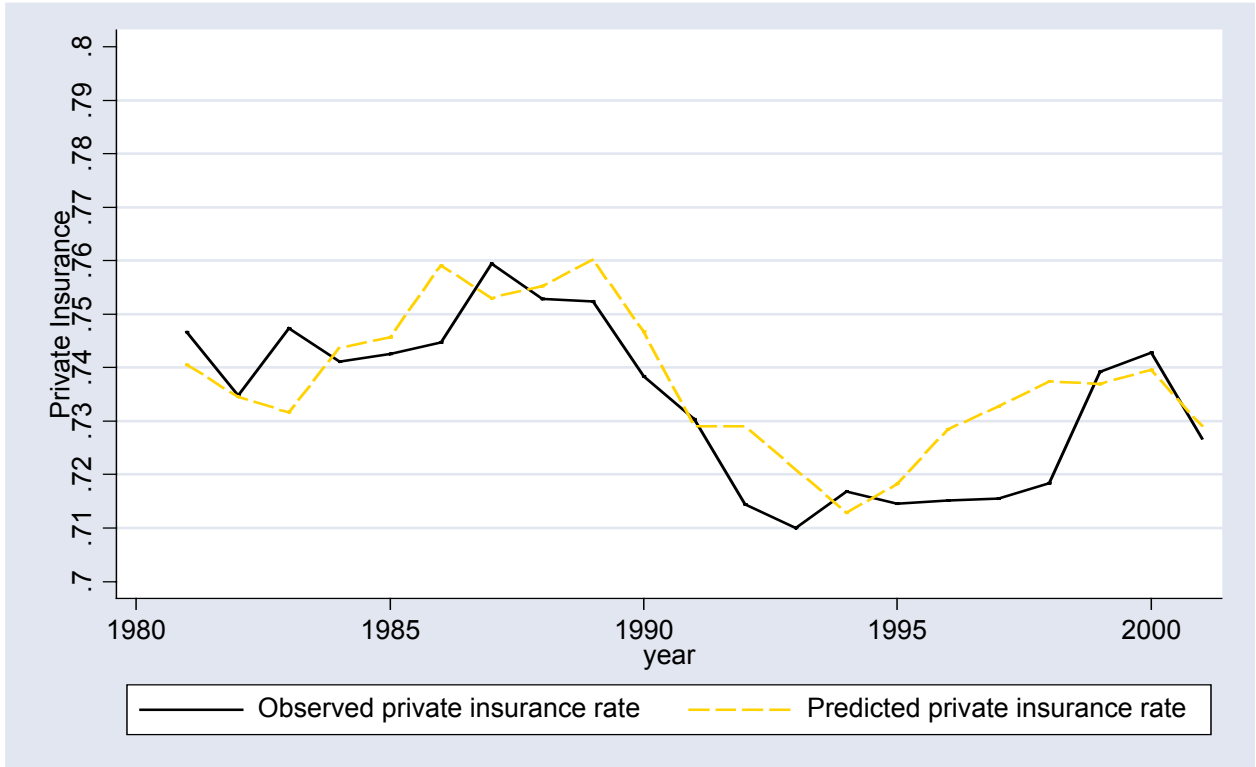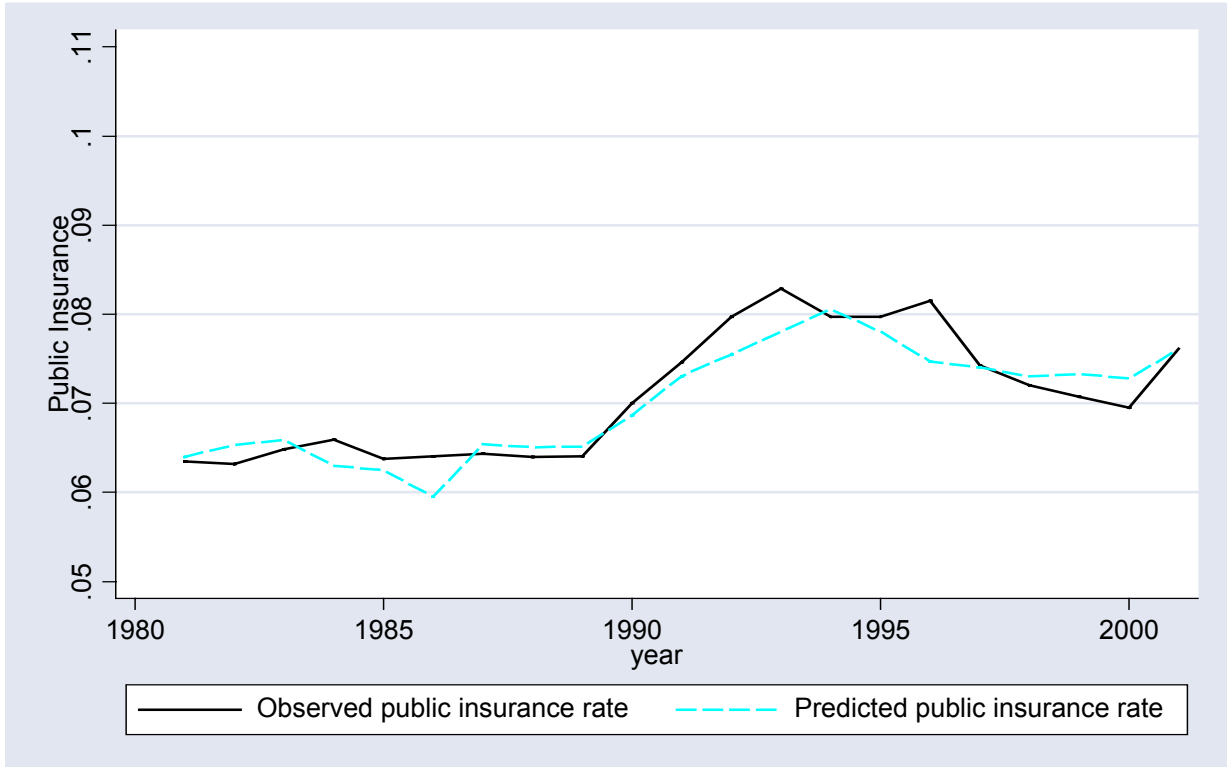Figure 1: Predicted and Observed Private Insurance Rate, non-elderly adult population

Figure 2: Predicted and observed public insurance rate, non-elderly adult population

Appendix Table 1: Historical unemployment, insurance coverage, and health care costs, for the non-elderly adult population 18-64

		1981	1985	1990	1995	1998	1999	2000	2001
Unemployment Rate	National Average	9.09%	7.02%	6.82%	5.49%	4.14%	3.98%	4.22%	4.98%
	Less than HS diploma	15.80%	13.81%	14.00%	13.02%	10.12%	9.73%	10.48%	10.65%
	HS diploma	10.80%	8.42%	7.99%	6.46%	4.83%	4.77%	5.10%	5.97%
	Some college	6.53%	4.91%	5.15%	4.73%	3.57%	3.51%	3.43%	4.61%
	College Graduates	2.24%	1.98%	2.38%	2.36%	1.94%	1.69%	2.08%	2.65%
% Uninsured	National Average	16.25%	16.58%	16.85%	18.86%	19.62%	17.64%	17.53%	18.46%
	Less than HS diploma	24.32%	27.79%	32.47%	34.38%	37.33%	35.84%	37.13%	38.11%
	HS diploma	15.88%	16.59%	17.89%	21.13%	21.93%	19.70%	19.84%	21.10%
	Some college	14.37%	13.65%	11.89%	15.65%	16.63%	14.80%	13.99%	14.99%
	College Graduates	9.05%	7.88%	7.24%	9.02%	9.41%	7.82%	7.95%	8.15%
% Private Insurance	National Average	74.66%	74.26%	73.84%	71.45%	71.84%	73.93%	74.28%	72.68%
	Less than HS diploma	57.28%	52.36%	45.57%	42.48%	43.09%	44.86%	44.45%	41.87%
	HS diploma	75.87%	74.37%	72.65%	68.91%	68.39%	70.76%	70.62%	68.42%
	Some college	79.81%	80.81%	82.40%	76.78%	76.64%	78.33%	79.22%	77.67%
	College Graduates	87.81%	89.11%	89.71%	87.82%	87.95%	89.41%	89.29%	89.00%
% Public Insurance	National Average	6.35%	6.37%	7.00%	7.97%	7.20%	7.07%	6.95%	7.61%
	Less than HS diploma	16.22%	17.67%	20.37%	22.04%	18.77%	18.76%	17.85%	19.20%
	HS diploma	5.30%	5.87%	7.01%	8.12%	8.35%	8.04%	8.26%	9.12%
	Some college	2.84%	2.73%	3.06%	5.43%	4.84%	5.01%	5.04%	5.61%
	College Graduates	1.07%	0.88%	1.29%	1.71%	1.65%	1.72%	1.82%	2.03%
Health Care Costs ($ 2002)	National Average	$1,592	$2,139	$2,787	$2,956	$3,028	$3,068	$3,121	$3,305