
International Journal of Health Care Finance and Economics, 1, 293–304, 2001

The Impact of the Tax System on Health Insurance Coverage*

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A central question in health economics is the extent to which this tax subsidization matters for the health insurance coverage of the U.S. population. I assess the impact of taxes on health insurance by using the considerable existing variation in tax subsidies, both at a point in time and across time. I do so by putting together data from more than a decade of Current Population Survey (CPS) data sets, and matching to workers in those data sets their tax subsidies to health insurance coverage. I find that the elasticity of insurance eligibility of workers is at least −0.6, and that the elasticity of own insurance coverage is roughly similar; the results imply that most of the impact of taxes on insurance coverage arise through firm offering and eligibility decisions. I also find that higher tax rates induce more private coverage through other sources, but less public coverage, so that overall there is a reduction in the rate of uninsurance that is comparable to the change in own employer-provided insurance coverage.

Keywords: health insurance, taxation

JEL classification: H2, I1

The dominant feature of the health insurance market in the U.S. is the provision of private health insurance through the workplace. In 1998, 91% of the privately insured non-elderly population, representing 65% of the total non-elderly population, received their insurance through the workplace (EBRI, 2000). There are a number of reasons why health insurance may naturally be provided through the workplace in the U.S. There may be substantial economies of scale in administering insurance which increase the value of pooling mechanisms. Workplaces provide a natural pooling mechanism along dimensions largely exogenous to health status. And, finally, the U.S. tax code subsidizes health insurance purchase through the firm relative to the non-group market by excluding the value of that insurance from an individual's income, a tax exclusion estimated to cost more than $100 billion in foregone state and local tax revenues in 1999 (Shiels and Hogan, 1999).

A central question in health economics is the extent to which this tax subsidization matters for the health insurance coverage of the U.S. population. This question is relevant for numerous contemporaneous policy debates. Proponents of fundamental tax reform would end the exclusion of health insurance from the income tax base, completely or partially ending tax subsidization. Other reforms to our tax system which adjust marginal rates

*Paper prepared for the conference "Why Do Employers Do What They Do? Studies of Employer-Sponsored Health Insurance," April 27, 2001.

have direct implications for the degree of tax subsidization of insurance. And the efficacy other proposals to increase insurance coverage through new subsidies will depend on how sensitive insurance coverage is to its after-tax price.

Despite the importance of this question, there is relatively little consensus about the impact of tax subsidies on insurance coverage. The purpose of this paper is to provide a new set of estimates of this impact. The main contribution of my approach is to use the considerable existing variation, both at a point in time and across time, in the U.S. tax code to identify the impact of the existing tax subsidy to health insurance coverage. I do so by putting together data from more than a decade of Current Population Survey (CPS) data sets, and matching to workers in those data sets their tax subsidies to health insurance coverage. I then estimate models of insurance coverage and offering as a function of these tax subsidies, controlling for other correlated determinants of insurance demand.

My results suggest that taxes are an important determinant of the decisions of firms to offer insurance, and as a result of insurance coverage of workers. I find that the elasticity of insurance eligibility of workers is at least -0.6, and that the elasticity of own insurance coverage is roughly similar; the results imply that most of the impact of taxes on insurance coverage arise through firm offering and eligibility decisions. I also find that higher tax rates induce more private coverage through other sources, but less public coverage, so that overall there is a reduction in the rate of uninsurance that is comparable to the change in own employer-provided insurance coverage.

The paper proceeds as follows. In Part I, I provide a brief review of previous related literature. In Part II, I discuss my data and empirical strategy. Part III presents the results, and Part IV concludes by discussing the implications of my findings for both tax policy and health insurance policy debates.

Part I: Previous Literature

There are fairly large previous literatures that attempt to estimate the key behavioral elasticities that will be focus of this exercise, mostly focused on the elasticity of firm offering decisions with respect to insurance prices or tax subsidies. The first approach here is to use variation in the premiums faced by firms to identify the price sensitivity of their offering decision. Two examples of this work are Feldman, Dowd, Leitz, and Blewett (1997), who use information from 1993 for a sample of small firms in Minnesota to estimate price elasticities of -3.9 (single coverage) to -5.8 (family coverage); and Marquis and Long (1999), who use data from 1993 for 10 states to estimate a much smaller price elasticity of only -0.14. A key problem with this approach, however, is that one only observes premiums for the firms that do offer insurance, and they must be imputed to firms that do not. Thus, instruments must be found that are correlated with the price of insurance but not firm demand, and previous articles have not used firm characteristics that are likely to meet this criterion (e.g., whether the firm is unionized).

A second approach is to use variation across areas in the cost of insurance. This was employed by Marquis and Long (1995), who estimated the demand for non-group insurance coverage among workers not offered employer-sponsored coverage as a function of the area-specific price of non-group coverage. They estimate an elasticity of non-group coverage of

−0.3 to −0.4. But variation in the cost of insurance across areas is a potentially problematic source of variation to use to identify the elasticity of insurance demand, for several reasons, most importantly that demand itself exerts a direct influence on price through the market mechanism.

The third approach is to use variation in taxation to identify the price elasticity of offering, in essence asking whether those firms with higher tax-related subsidies to insurance purchase are more likely to offer insurance. Leibowitz and Chernew (1992) use variation in tax rates across states to examine the impact of after-tax prices on insurance offering of small firms, as well as using variation in premium quotes across locations obtained from small group insurers. They separately estimate the response to premiums and subsidies, and obtain an elasticity of between −0.8 (premiums) and −2.9 (subsidies). Royalty (1999) also uses cross-state variation in marginal tax rates to estimate an elasticity of firm insurance offering across all employers of −0.63. Gentry and Peress (1994) study cross-city differences in the average share of workers offered health insurance benefits, as a function of cross-state differences in after-tax prices of insurance. They find that for each percentage point increase in the price of health insurance, the percentage of workers covered by employer-provided insurance declines by 1.8 percent, which implies a price elasticity of demand of −1.8.

These types of studies have the advantage that differences across cites and states in tax rates should be independent of insurance offering decisions. But they may not be entirely independent: cities and states with substantial taste for insurance may be the ones that offer the largest tax breaks, which would lead to a strong relationship between price and offering. This criticism is addressed in recent work by Finkelstein (1999), who studies the removal of the large (25%) tax subsidy to supplemental private health insurance in Quebec in 1993, and finds an elasticity of −0.42 to −0.54 for employer offering. But it is somewhat unclear how to apply the elasticity of offering of supplemental insurance for a national health insurance scheme to the decision of U.S. firms to offer full private health insurance plans.

A third approach comes from running small scale subsidy pilot programs for small businesses and evaluating the response of firms to subsidized prices. These pilot programs have the advantage of essentially providing a randomized intervention. Two such pilot programs are evaluated by Helms, Gauthier, and Campion (1992) and Thorpe et al. (1992). The former study finds a wide degree of price responsiveness across sites, with sites such as Utah offering 40% discounts and seeing only 4% enrollment among uninsured firms (an elasticity of only −0.1) and other sites such as Arizona offering 10% discounts and seeing 4–11% enrollment (an elasticity of −0.4 to −1.1). The latter finds very weak response to a program that provided a 50% subsidy to the price of insurance for small firms in New York, with an elasticity of only −0.07 to −0.33. But it is unclear whether the small elasticities estimated here are because of the temporary experimental nature of these subsidies; firms may be reticent to set up insurance plans based on subsidies that will only last for a short time. There could be much larger responses to more permanent changes in the after-tax price of insurance.

A final approach is to use responses of firms to hypothetical questions about changes in the price of insurance. Morrisey, Jensen, and Merlock (1994) use the response to such hypothetical questions to estimate a price elasticity of insurance offering among small firms of −0.92. But it is unclear whether firms respond in the same way to hypothetical question as they do when faced with an actual insurance purchase decisions.

A final issue with this literature is that, with firm level data, one does not observe the characteristics of the employees to which the firm is responding in making its benefits decisions; who is the "marginal worker" whose preferences determine the firm's benefits provision decisions? One article which attempts to address both the identification and "marginal worker" issues is Gruber and Poterba (1994). They study how the self-employed responding to the Tax Reform Act of 1986, which introduced a subsidy to the insurance purchases of the self-employed. This "natural experiment" provides exogenous variation in the after-tax price of insurance. Moreover, for the self-employed, there is no issue of deciding who is the marginal worker. They find significant increases in the insurance coverage of the self-employed relative to the employed over this period, with an implied price elasticity of as large as -1.8. Unfortunately, however, it is unclear how generalizable these results are to firms, who must aggregate the preferences of all their workers in making benefits decisions.

A more recent approach to surmounting these problems is Gruber and Lettau (2000). In that paper, the authors use data from the Employee Compensation Index (ECI) dataset, which collects information both on firm insurance provisions and the characteristics of a sample of workers in the firm. The latter feature allows them to directly measure the distribution of tax rates within the firm, and to assess which tax rate seems to be most central in driving benefits provision decisions; they conclude that the right model is one where both the worker with the median tax price *and* the highest paid workers in the firm together determine benefits provision. They also introduce an identification strategy that will be employed here as well: using variation across states and over time in tax prices to identify the tax impact. They estimate an elasticity of insurance offering of -0.3 to -0.4, towards the lower end of the previous literature.

Another margin of response that is of potential importance in thinking about tax subsidies to insurance is the elasticity of takeup of employer-provided insurance by those employees offered coverage. Chernew, Frick and McLaughlin (1997) model insurance takeup among those offered insurance in small firms as a function of employer premium sharing rules and find a very small elasticity of takeup of only -0.033 to -0.095.

Part II: Data and Empirical Framework

Data

The data for this analysis come from the Current Population Survey (CPS), a nationally representative survey of the U.S. population. Each March since 1980, the CPS has collected a set of data on insurance coverage from various sources that are the standard source used by analysts for estimating insurance coverage in the U.S. (e.g., EBRI, 2000). The questions in these March surveys refer, in theory, to insurance coverage at any point in the previous year, so that uninsurance as measured by this survey is defined as year-long uninsurance. In practice, how respondents interpret these questions is unclear, and the responses probably reflect a mix of point in time and historical insurance coverage.

In addition, in May 1988, April 1993, and February 1995, 1997, and 1999, the CPS has collected data on employer insurance offering, and employee insurance eligibility for offered policies. These data are only collected for workers. The main data set for the analysis consists

of a match between the March data and these supplement data for these five years; the match rate (workers with offering information in the supplements to whom we can match March information) varies from 50% to 66%. I have also replicated the findings for the March variables using the full set of March surveys from 1988–1999, and the results are quite similar. I exclude from the sample federal workers, since they are all automatically offered health insurance, and the self-employed, who are subject to more complicated tax incentives over this period (due to the introduction and gradual increase in the tax deductibility of insurance for the self-employed).

I focus on several health insurance indicators:

- Coverage by health insurance from one's own employer last year (from March)
- Coverage by health insurance from one's own employer now (from supplement)
- Employer offers health insurance (from supplement)
- Employer offers health insurance and worker is eligible (from supplement)
- Coverage by health insurance now conditional on employer offer and eligibility (from supplement)
- Coverage exclusively by nongroup insurance (e.g., only nongroup coverage and no other sources) last year (from March)
- Coverage exclusively by public insurance coverage last year (from March)
- Coverage exclusively by other group insurance last year (from March)
- Uninsured last year (from March)

Tax Subsidy Measure

The key regressor is the tax subsidy to insurance purchase for that worker. This is computed as:

$$TP = \frac{(1 - \tau_f - \tau_s - \tau_{ss} - \tau_{mc})}{1 + \tau_{ss} + \tau_{mc}}$$

where τ_f is the federal income tax marginal rate; τ_s is the state income tax marginal rate; τ_{ss} is the marginal payroll tax rate for the OASDI program; and τ_{mc} is the marginal payroll tax rate for the Medicare HI program.[1] I differentiate the latter two programs because, beginning in the early 1990s, the taxable maximum for the HI program was increased above that for the OASDI program (and was eventually removed altogether); the marginal rate is zero above the taxable maximum for payroll taxation.

I attach marginal tax rates to each worker in our matched CPS sample by first dividing the data into Tax Filing Units (TFUs), which correspond to the family structures used by the IRS for computing tax liabilities. I then use the NBER's TAXSIM model, which inputs information on the major elements of taxable income, to compute both a federal and state marginal tax rate.[2] These major elements of taxable income are all available in our CPS data, with the key exception being itemization status and amounts. I therefore for each

observation create two states of the world: itemizer and non-itemizer. I use data from the Statistics of Income (SOI) data, which is a dataset with information on all elements of taxable income and taxes paid for a nationally representative sample of workers in each year, to predict odds of itemization and amount itemized by earnings and state of residence. I then impute the amount itemized in the itemizer state of the world, and compute for each TFU their tax rate as an itemizer and a non-itemizer. Finally, I use the imputed odds of itemization to take a weighted average of these two tax rates.

Model

Throughout the analysis, I estimate models of insurance measures (as listed above) as a function of the tax price of insurance. But I recognize that the individual's tax price is naturally correlated with demand for insurance for many reasons beyond the tax code; for example, higher income individuals will have more demand for insurance and a lower tax price of that insurance. Moreover, there is likely to be considerable measurement error in this tax price, through measurement error in income and through imputation of itemization status and amounts.

I deal with these potential problem in two ways. First, I include in the model a host of individual characteristics that may be correlated with both the demand for insurance and the tax price. In particular, I control for: family income (dummies for deciles of the family income distribution); dummy for married; interactions of family income deciles with marital status dummy; dummies for each survey year; interactions of these 20 decile∗marital status dummies with the full set of year dummies; dummies for 1, 2, . . . , 6 or more children; dummies for age <25, 25–34, 35–44, 45–54, and 55+; dummy for female; interaction of female∗married; dummies for high school dropout, high school graduate, some college, and college graduate; dummy for non-white; dummies for firm size (<24 employees; 25–99 employees; 100–499 employees; 500–999 employees; 1000+ employees); a full set of dummies for two-digit industry categories; and a full set of fixed effects for state of residence.

Second, I pursue an instrumental variables strategy, using two different instruments. My primary instrument is a "simulated" tax price that uses variation across income groups, states, and years to identify tax elasticities; this parallels the approach used by Gruber and Lettau (2000). In particular, I first divide the full sample into deciles of the income distribution, separately by married and singles, and from each decile of the distribution I take a random sample of 250 TFUs. I then assign this sample of 500 TFUs to each state in each year. I then estimate for this sample in each state in each year their tax prices. Finally, I take the average tax price for that decile∗married∗state∗year cell, and assign that to every TFU in that cell.

The result is an instrument that varies only by income decile, marital status, state, and year. Thus, by including full sets of dummies for the earnings categories∗marital status, states, and years, it is clear that the source of identification of this model is *only* interactions of income, marital status, states, and years. Moreover, in the base model, I also include (as noted above) a full set of earnings∗marital status∗year interactions, so that any changes over time in the demand for insurance by income group or marital status are controlled for. This instrument therefore rids the model of any individual measurement error in tax prices,

as well as other individual-specific factors correlated with both tax price and insurance demand other than these interactions.

These interactions provide substantial variation in tax rates, due to three sources. The first is differences across states at any point in time in the progressivity of their tax structures. The second is changes over time in state taxation on average. And the third is changes in the progressivity of state taxation over time; effects of changes in federal tax progressivity over time that operate nationally are already absorbed by the included earnings group∗marital status∗year interactions. Of course, it is possible that some of these sources of variation are themselves correlated with insurance demand; we takeup this issue below.

Another potential issue is that even this instrument may be biased through wage shifting. There is a significant body of evidence to suggest that wages adjust to reflect insurance provision and costs (see Gruber, 2000 for a review). As a result, by using actual wage categories to create the instrument, I may introduce an automatic correlation between the tax price and insurance coverage. This is unlikely to cause a very significant bias, however, given the ratio of insurance costs to the width of typical tax brackets in the post-1987 era (after the Tax Reform Act of 1986 widened tax brackets and many states as well moved to flatter systems). Gruber and Lettau (2000) discuss the impacts of addressing this problem in detail, and find, consistent with this conjecture, that there is little impact on their results.

Means

The data set is described in Table 1. There are 103,460 observations in the full data set. In this full data set, 79% of workers report being offered insurance, and 73% report being offered and eligible. Roughly 63% of workers report being covered by employer-provided insurance, regardless of whether a point in time or full year measure is used; takeup at a point in time, conditional on being offered and eligible, is 85%. 4.2% of workers

Table 1. Means.

Variable	Mean	Standard Deviation
Offered insurance	0.785	0.411
Offer insurance & eligible	0.732	0.443
Covered in supplement	0.623	0.485
Covered last year	0.638	0.480
Covered in supplement if offered & eligible	0.849	0.358
Covered by other group	0.178	0.382
Nongroup coverage	0.042	0.201
Public coverage	0.026	0.158
Uninsured	0.113	0.317
Employer pays all	0.203	0.402
Employer pays some	0.409	0.492
Employer pays none	0.027	0.163
Tax price of insurance	0.645	0.089
Number of obs.	103460	103460

Note: Tabulations from matched March-Supplement CPS data described in text.

have nongroup insurance, 2.6% have public insurance, and 17.8% have other coverage, so that 11.3% are uninsured. The data on employer premium sharing is not available for 1995, as the question in that year's March survey did not distinguish those employers who paid all or some of the costs of insurance. As a result, our premium sharing regressions exclude 1995.

Part III: Results

The first column of Table 2 shows the basic findings from this instrumental variables regression analysis, using the first (actual income) instrument. Each row corresponds to a separate regression, where the dependent variable is listed in the first column. The coefficient shown is that on the tax price. Although the coefficients are not shown, all regressions include the full set of control variables described earlier. Each cell shows the coefficient and standard

Table 2. Results.

	Basic IV	Add State∗Year
Offered insurance	−0.940	−0.948
	(0.131)	(0.137)
	[−0.772]	[−0.779]
Offer insurance & eligible	−0.735	−0.757
	(0.141)	(0.146)
	[−0.648]	[−0.667]
Covered in supplement	−0.688	−0.629
	(0.155)	(0.161)
	[−0.712]	[−0.651]
Covered last year	−0.696	−0.677
	(0.150)	(0.156)
	[−0.703]	[−0.683]
Covered in supp. if offered & eligible	−0.086	0.049
	(0.159)	(0.166)
	[−0.065]	[0.037]
Covered by other group	−0.080	−0.082
	(0.126)	(0.132)
	[−0.290]	[−0.297]
Nongroup coverage	0.008	0.008
	(0.070)	(0.073)
	[.121]	[.121]
Public coverage	0.162	0.146
	(0.054)	(0.057)
	[4.084]	[3.681]
Uninsured	0.628	0.634
	(0.103)	(0.107)
	[3.571]	[3.605]
Number of obs.	103460	103460

Note: Each row shows coefficient on tax price from regressions described in the text. Standard errors in parentheses; elasticities in square brackets. Second column adds state∗year interactions to the base specification.

error (in parentheses). In addition, I show in square brackets the elasticity (the percentage change in the dependent variable for each percent change in the tax price).

The first and second rows of the table shows that there is a significant negative effect of the tax price on the employer's decision to offer insurance. In both cases, there is a sizeable and significant negative effect. But the effects are much larger for the pure offering variable: for each percentage point rise in the tax price, there is a 0.94 percentage point reduction in the odds that a worker is offered insurance. An equal percentage point rise in the tax price would lead to a 0.74 percentage point decline in the odds that a workers is offered and eligible for insurance.

It is unclear which measure is the more appropriate one for capturing the impact of tax policy on firm decision-making. But there are two reasons to favor the latter measure. First, what is ultimately of interest is worker eligibility for insurance, and this incorporates both the firms offering and eligibility decisions. Second, workers may confuse offering and eligibility when answering these questions, so it is probably best to simply combine the two. Evidence for this comes from the fact that the rate of insurance offering for the largest firms in our sample (1000 or more employees) is only reported to by 88%, while we know from firm sources that essentially all firms of this size offer insurance (Gruber and Lettau, 2000).

The latter estimate is much higher than the estimated elasticity in Gruber and Lettau (2000). In that paper the authors estimated an elasticity of offering of -0.31 to -0.41, with a dependent variable there was comparable to offered and eligible, since workers who were ineligible for insurance in their ECI data were coded as not offered. The empirical strategy used here is identical to that employed in their analysis, but their data are clearly superior for this exercise as the administrative data on insurance offering contains less error than these worker self-reports. Thus, this finding is perhaps most usefully viewed as confirming the very significant response of employer insurance offering to tax incentives.

The next two rows of the table show that there is a correspondingly large and negative impact of the tax price on health insurance coverage. The coefficients are very similar whether the insurance coverage last year variable (from March survey) or insurance coverage at time of survey variable (from supplement) is used. I find that each percentage point rise in the tax price leads to a fall of -0.69 in the percent of workers covered by employer-provided insurance. The implied elasticities are about -0.7

The fact that the coefficient on coverage is so similar to that on offered and eligible implies that there is little impact on insurance takeup among those offered. This implication is potentially confirmed by the next row, which runs a takeup regression conditional on offering and eligibility, and finds a zero effect. But this small impact should not be surprising. For takeup decisions, taxes should matter only for those workers who are making their premium contributions on a pre-tax basis; over most of the period under study, this is a minority of workers.

Nevertheless, the fact that there is no effect at all is consistent with the very low takeup elasticities estimated by Chernew, Frick and McLaughlin (1997). But the result is only suggestive, due to sample selection. That is, when the pool of firms that is offering changes, it affects the average takeup rate, so that the conditional takeup coefficient I estimate is not a true marginal impact on takeup decisions. For example, suppose that when the tax price rises the firms that stop offering insurance are the ones with the lowest takeup of

that insurance ex ante (as seems most natural). Then observed takeup among the remaining firms will be higher in the absence of any true takeup response (since the lowest takeup firms have been removed from the pool, raising the average). So there is a natural upward bias to any takeup finding here.

The next few rows examine the impact of the tax price on other sources of coverage. There is also a negative, but insignificant, impact of tax price on coverage by other group insurance. This is to be expected since changes in a worker's own tax price will also be reflected in their spouse's tax price, and therefore in their spouse's insurance decisions. Thus, the full effect on group coverage is the sum of the effect on own coverage and on coverage from others.

In principle, this movement out of the (subsidized) group insurance market as tax prices rise should be offset by some movement into the (unsubsidized) nongroup insurance market. In practice, however, we find no effect on nongroup insurance coverage, suggesting relatively little substitution across these types of insurance.

Another offset, however, that does obtain the right sign is the impact on unsubsidized public coverage. In fact, here we find a very sizeable shift into public coverage as the tax price rises. This effect is enormous relative to the small base of public coverage in our sample, resulting in an elasticity of 4.1! But the effect itself is fairly small, suggesting that each percentage point rise in the tax price leads 0.16 percentage points more persons to be on public coverage.

The sum of all these effects is reflected in the next row, which shows the impact on being uninsured. These results imply that for each percentage point rise in the tax price, there is a 0.63 percentage point rise in uninsurance, a very large effect. The implied elasticity of uninsurance (3.6) is enormous, given the small base of uninsurance.

The second column of Table 2 considers an important specification check on these findings. One of the major sources of identification of these results is changes in state tax systems over time. But, in general, it is possible that state taxes change when there are other underlying changes in the state economy that may drive insurance coverage. This concern can be addressed directly by including in the model a full set of state$*$year interactions, to pick up any changes over time in state insurance demand.

In fact, as the next column shows, doing so has essentially no effect on the main findings, with the offering and coverage effects essentially identical to the first column. This confirms the basic message of the table: tax policy matters for insurance coverage, but almost all of its influence is through the employer's decision to offer insurance.

Part IV: Conclusions

A key question for understanding the determinants of health insurance coverage, as well as the broader impacts of tax reform, is the sensitivity of insurance decisions to tax subsidies. The findings in this paper suggest that this sensitivity is significant. In particular, I find that the firm's decision to offer insurance is sizeably affected by the tax price of insurance; the implied elasticity of firm offering with respect to taxes is -0.7. This confirms the conclusion from other recent work that employers are very sensitive to tax incentives in their decisions to offer insurance.

I also find that taxes appear to exert little independent influence on worker takeup decisions. This is consistent as well with other findings that worker takeup of insurance is not price elastic. I do find as well some small influences on other sources of insurance coverage, most notably a rise in public coverage when the tax subsidy to employer-provided insurance falls. But, overall, these effects roughly cancel, so that the net effect on being uninsured is essentially equal to the impact on employer-provided insurance offering. This is an important new finding: the impact of tax incentives on the insurance coverage of the U.S. works exclusively through employer offering decisions. This suggests that results of tax subsidies from models of employer offering can be extrapolated directly to consider implications for overall insurance coverage.

Despite this interesting new evidence, there are further questions that must be addressed before we can fully model the impact of various tax-based approaches to increasing health insurance coverage in the U.S. For example, a popular proposed route for increasing coverage is tax credits for uninsured individuals to purchase health insurance. But we have no convincing evidence to date on the elasticity of takeup of insurance with respect to its price among those who are now not offered insurance by their employer, as is the case with more than three-quarters of the uninsured. Only when this type of evidence is available can we use it, in combination with the findings here, to consider the tradeoffs between alternative tax policies, such as those that subsidize individuals versus subsidizing firms.

Acknowledgments

I am grateful to Len Burman, Michael Morrisey and the other participants in this conference for helpful comments, to Robin McKnight and Tracey Seslen for excellent research assistance, and to the Department of Labor for funding.

Notes

1. The reason that the payroll tax rate is additive in the denominator is that the employer is indifferent between purchasing one dollar of benefits or paying wages of $1/(1 + \tau_{ss} + \tau_{mc})$, since each dollar of wages requires a payroll tax payment as well.
2. For more information about TAXSIM, see Feenberg and Coutts (1993). A public use version of TAXSIM is available at www.nber.org/taxsim.

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