CUTTING TAXES FOR INSURING: OPTIONS AND EFFECTS OF TAX CREDITS FOR HEALTH INSURANCE

Mark Pauly, Bradley Herring
University of Pennsylvania

May, 2000

Abstract: What options are available in the design of refundable tax credits for health insurance purchases? What are the effects of different options, and how should they be evaluated? The research reported here compares three alternative types of tax credit schemes: fixed dollar credits toward the purchase of a benchmark basic plan, proportional credits toward the purchase of a benchmark plan, and fixed dollar credits which can be used for the purchase of any plan with a premium at least as large as the credit. Normatively, we show that it is inappropriate to evaluate alternative credit designs based primarily on their effect on the number of uninsured persons. Credits claimed by people who were already insured can have very beneficial equity and efficiency effects. Positively, we use two new modeling techniques to bracket the range of possible estimates of the impact of different credit designs on the numbers of uninsured. We show that credits will have very little effect until they exceed a certain threshold but that, above that level, credits which on average cover approximately half of the premium of a benchmark policy may substantially reduce the number of uninsured, especially if they take the fixed dollar form. We use these new estimates to illustrate the tradeoffs in program design, and show that key questions are the value consumers place on avoiding charity or bad debt care and the value policymakers place on increasing the level of coverage of different types of formerly uninsured persons.

This research was supported by a grant from the Leon Lowenstein Foundation.

A previous version of this paper was prepared for the Council on the Economic Impact of Health System Change conference entitled "Using Tax Policy to Reduce the Number of Uninsured," held on December 17th, 1999.

Introduction.

Despite rising real incomes and a tight labor market, the number of uninsured workers and dependents has been growing. Workers sometimes choose jobs at which no employment-based coverage is offered, and then fail to purchase individual coverage as a substitute, or they reject group insurance when it is offered to them at a fraction of its total premium. Since the failure to obtain insurance leads both to use of charity care and underuse of medical services relative to community norms, policymakers in both political parties have turned to the possible use of tax credits as a way to facilitate and encourage the purchase of private insurance coverage.

A tax credit for health insurance reduces the federal income and payroll taxes of a worker who obtains health insurance. Most proposals envision a refundable tax credit that will pay cash to a person who purchases insurance and whose federal tax liability is less than the value of the credit. In this paper we focus on the distributional and allocative effects of a variety of alternative forms of tax credits. We both describe the relative effects in qualitative terms and provide some estimates of the quantitative magnitude of the effects based on new methods for generating unbiased estimates of subsidies on the number of persons buying any insurance and the amount and type of insurance purchased. We focus our investigation in two ways. We limit our analysis primarily to workers and their dependents, who constitute the great bulk of the uninsured and who are obviously falling beyond the reach of the current tax subsidy to employment-based health insurance. We also provide some detail regarding workers whose incomes place them above the poverty line but below the median family income; it is this group with incomes too high for traditional subsidy programs but too low to provide generous funding for insurance who are most difficult to reach with traditional welfare programs and who yet are the great bulk of the uninsured.

We consider a variety of options for designing the form of credit programs and for specifying eligibility for credits. Our estimates of the responsiveness of insurance purchasing behavior to credits begin with assumed utility maximizing behavior by risk-averse workers facing

various net-of-tax premiums or prices for different amounts of insurance coverage. These "synthetic" estimates differ fundamentally from most of those presented thus far (e.g., Gruber, 1999; Sheils et al., 1999; Thorpe, 1999) which are based on extending to new credit programs the patterns of behavior exhibited in the past by workers who faced somewhat similar—but by no means identical—variations in the net price of coverage.

Our approach differs from that often taken in analyzing policy interventions in that we seek to outline a reasonable range of possible outcomes rather than develop and argue for a single point estimate. Probably the requirement that the Congressional Budget Office develop a single "score" for the fiscal impact of various policy changes is responsible for the focus on best point estimates. In the case of tax credits for insurance, however, past experience and current data make this procedure somewhat unreasonable. Most proposals will direct new subsidies to different people from those whose insurance purchases have previously been subsidized, and the credits differ in amount, design, and required spending from those for which there is some experience. We know how moderate tax subsides through the exclusion of employment-based premiums affect insurance purchases of the middle class and above, and we know that massive subsidies through Medicaid affect the coverage of the poor. But the great bulk of tax credit proposals envision subsidies larger than moderate but less than massive, and would target those subsidies on the great bulk of the uninsured who have incomes between poor and well-off. It is therefore appropriate to be humble in estimating the impact of any single plan and, in choosing among plans, it is appropriate to prefer designs that accommodate a wide range of possible but currently unknowable outcomes, rather than designs that are very efficient or equitable under some parameters but very wrong under others.

Our conclusions differ from those from the conventional treatments of tax credit programs in two ways. First, we find plausible estimated impacts on the numbers of uninsured persons that are larger than those provided by other studies. Second, we focus explicitly on the distinction

between the "cost" to the federal government of tax credits (based on the usual accounting for tax credit programs) and the more relevant measures of impacts on aggregate economic welfare and cost to the economy in terms of reallocation of resources. Using this perspective, some tax credit programs with "net costs to the federal government" substantially in excess of the premium per newly insured person actually have quite low true economic costs. The reason for the divergence is that much of the "cost to the government" is actually a transfer to some people presently insured or, more meaningfully, a tax cut for them which they may well deserve on equity and efficiency grounds. We suggest that economic cost, not cost to the government, is the most appropriate measure to be used in analyzing and comparing different tax credit policies. Nevertheless, we still find (as do most other studies) that modest subsidies will have little effect in reducing the number of the uninsured; subsidies may well have to be on the order of a half of premiums to have any important effect. However, beyond that threshold, the effect can be substantial.

The Features of a Tax Credit Program.

The key defining features or parameters of a tax credit program are the following: 1) the level or schedule of dollar amounts of credits for which a person with a given set of characteristics is eligible; 2) the amount or type of insurance to which the credit may be applied; and 3) eligibility requirements for people with different characteristics. For example, one simple type of credit program would make a fixed dollar amount of credit available for a specified benchmark insurance policy to all workers and their dependents at a given income level. If the premium for the benchmark policy were $2500 per worker per year, and the credit was, say, $1000 for every uninsured worker, we would be interested in knowing what fraction of those persons would prefer paying $1500 for the benchmark policy to remaining uninsured. That is, how many people have "reservation prices" for insurance above and below $1500? One simple type of synthetic estimate would postulate that a worker whose expected out-of-pocket "insurable" medical expenses

exceeded $1500 would surely have a reservation price of $1500 or more and therefore would surely prefer the credit to remaining uninsured. However, there still might be other risk-averse persons with lower expected losses who would prefer insurance with the subsidy. There is a variety of other design features and other motivations to value insurance which ought to be considered. We find that one of the primary reasons for a small effect of credits is that the out-of-pocket expenses of the uninsured, even the uninsured with incomes well above the poverty line, are not very large on average. How they feel about care they receive but do not pay for therefore becomes important.

A Benchmark Case and Some Descriptive Statistics.

The uninsured in the United States vary substantially across a large number of characteristics. Substantial fractions of the uninsured are both high and low income, both young and middle-aged, both in good health and in frail or poor health. In order to make clear the nature of the tradeoffs in different tax credit designs, we want to begin by focusing on a subset of the uninsured population that is both relevant to policy and more homogenous than the uninsured as a whole. Specifically, we limit our discussion to the population of full-time workers and their dependents. We have selected this population for several reasons. Workers and their dependents constitute a majority of the uninsured, and yet they are eligible for larger subsidies under the present tax code than any other population group that is neither poor nor elderly. The fact that the working uninsured have passed up significant subsidies already makes it likely that even larger subsidies will be needed to get the attention of this population and motivate them to obtain coverage.

Moreover, we begin by examining the subset of workers and dependents whose total family incomes lie between 200 and 250 percent of the federal poverty line adjusted for family size. This population with incomes just above twice the poverty line represents the lower middle class who

have the most difficult time obtaining insurance. Their incomes are too high for substantial Medicaid subsidies (although they have been targeted for the Children's Health Initiative Program (CHIP) in some states). They cannot expect to obtain a significant amount charity care except in the case of really severe illnesses; most of the time they should expect to pay something. And yet they have little discretionary income to spend on medical care or on individual, or "nongroup", insurance.

Table 1 provides some descriptive statistics both for the entire U.S. population of workers and their dependents and for this lower middle-income sub-sample, based on the large nationwide 1996 Medical Expenditure Panel Survey (MEPS). While a majority of those between 200 and 250 percent of poverty do obtain private insurance in some fashion, about 22 percent of such individuals without public coverage are uninsured—somewhat in excess of the national average proportion for workers. As expected, the proportion covered by public insurance is small, less than ten percent of the total, some portion of which represents retired military. Of the uninsured workers and dependents at this income level, about 42 percent have a family member who was offered insurance in connection with their employment, declined it, and failed to obtain nongroup insurance—also in excess of the national average of about 38 percent. The remaining 58 percent of these lower middle-income uninsured have no family member who took a job at which insurance was offered to them.[1] Of the insured, 94 percent obtain their coverage through an employer, while only 6 percent purchased private nongroup coverage.

Why did a sizeable minority fail to obtain coverage? There are some explanations we can rule out. One common hypothesis is that they could not "afford" coverage—presumably meaning that the purchase of insurance would leave too little income left for other necessities. There is no technical economic definition of "affordable" of which we are aware. However, income level alone cannot explain the failure to purchase since a majority of persons at the same income level did somehow obtain coverage. Another possibility is that workers not offered job-based coverage

found the high loading or stricter underwriting of individual insurers to be a barrier. Since this data was taken from a time in which the unemployment rate was low (but not as low as it is at present), many of these workers would have had the opportunity to choose another job which did carry group coverage, but for some reason chose instead a job with no coverage but higher money wages. Moreover, recent research suggests that the individual insurance market is neither as prone to rejecting high risks nor as costly as many suppose (Pauly and Herring, 1999; Pauly et al., 1999). However, this same research does suggest that lower income high risks working for small firms were more likely to lack coverage than others of similar income, and it does note that the combination of relatively high administrative loading and no tax subsidy would at present make individual insurance rather unattractive (even if it is not "unaffordable").

Nevertheless, these results suggest that there is more to failing to obtain insurance for oneself and one's dependents among this population group than just low income and higher insurance prices. Tastes for insurance may be weak, public or charity care opportunities may exist, expected expense may be believed to be low, or there may be unusually pressing family financial needs that make the premium the uninsured would be willing to pay—their reservation price—substantially less than the lowest premium they have an opportunity to pay. While determining these "other reasons" would be highly useful research, we assume here that the distribution of reservation prices is given. We then estimate below what proportion of persons would have reservation prices below the price after it was reduced by a given tax credit program.

Before we consider the effects of new subsidy programs, however, we need to describe the pattern of subsidies currently received by this group. The largest proportion of subsidies to this group take the form of exclusion of employer paid premiums for group insurance from income and payroll taxes (at federal and state levels). For those who are not wage earners, there is virtually zero federal income tax deductibility of premiums because this group very rarely has enough deductions and high enough total medical expenses to make itemization worthwhile. The self-

employed are able to deduct a portion of their premiums, but again the low frequency of itemization in this income category makes such behavior very rare. However, there may be opportunities for people in this group to receive free or subsidized care, through public hospitals, the VA, neighborhood health centers, and the like.

For purposes of illustration, consider a single, middle-aged, male wage earner with total compensation of $20,000 a year; this gives him a marginal federal income tax rate of 15 percent and places him between 200 and 250 percent of the poverty line. If this worker is uninsured, or even a purchaser of nongroup insurance, his net federal tax equals $4,604 (income tax of $3004, obtained from a 1999 IRS tax table, plus an eight percent payroll tax of $1600). However, a similar worker at a firm offering insurance and covering eighty percent of a single-coverage premium of $1,847 (these are each average amounts obtained from the MEPS Insurance Component data) with full incidence on wages pays taxes equaling $4,268 (income tax of $2,779 plus payroll tax of $1,489). This tax-exemption then provides a subsidy of $336 to such individuals who obtain employment-based coverage—approximately 1.7 percent of income and 7.3 percent of their tax liability. The magnitude of this subsidy—alternatively derived as one's marginal tax rate times the employer-paid portion of the premium—clearly increases as one's income rises.[2]

This differential subsidy has implications for efficiency and for the estimation of the effectiveness of alternative subsidy programs. The ideally efficient subsidy program would offer the same subsidy to a person with given characteristics in different settings. The present subsidy, however, induces people to choose group insurance more frequently than would be justified on the basis of its costs and benefits to them, to choose excessive amounts of insurance coverage, and to choose different employment settings from the efficient ones.

The presence of the tax subsidy also affects the impact of any new subsidy program. Many (though not all) of the currently uninsured could have taken advantage of the current

subsidy. The most important way they could have done so (but chose not to) would have been to take a job at a firm offering insurance with full or partial employer payment. They might also have refused insurance because of a positive employee premium at a firm that made insurance available. If the uninsured therefore contain disproportionate numbers of persons who have rejected coverage at the current subsidy, it follows that they will only purchase coverage (if at all) if they receive a subsidy larger than the current subsidy. This means that any effective new subsidy program must offer a subsidy to each income group larger than the subsidy or net insurance cost currently available to them through the tax advantages to employment-based insurance. In short, effective new subsidies must be relatively large because they must "climb over" the existing relatively generous set of subsides.

Design Options.

Consider individuals with similar expected medical expense. Because of other influences, such as variation in risk-aversion, there will be variation in their willingness to pay or reservation price for a given specified insurance policy. Given some premium charged in the market, those with reservation prices greater than the market price will purchase the policy, but those with reservation prices less than the market premium will not purchase, and will become uninsured. If a uniform fixed dollar tax credit for the purchase of the benchmark policy is made available, some of the formerly uninsured will also purchase. The reduction in the number of uninsured will depend on the relative frequency of people with reservation prices between the original market price and that price less the credit.

If the purchase of at least a minimum benchmark policy is required in order to qualify for the fixed-dollar credit, some persons with high marginal values for insurance might choose to purchase additional coverage beyond that level (depending on the market price for additional

coverage). However, these choices will fully reflect the additional cost if markets are competitive, and therefore will be efficient. (This assumes that a single insurer sells the entire policy.)

Those who would, before the credit was offered, have been purchasing insurance would also be expected to claim the credit. As a result, the total amount of tax credits paid by the government will exceed the amount of the credits claimed by the formerly uninsured. The average credit amount per newly insured person could be substantial if there were relatively many previously insured persons made eligible for the credit.

This "excess credit" represents a transfer to those who had previously purchased insurance. It does not represent inefficiency from a resource allocation viewpoint. If the credit is viewed as public spending, one could say that the cost to the government per newly insured person is high. If, instead, the credit paid to those who already purchased insurance is viewed as a tax reduction for them, the process would be described as one which gives equal tax reductions to all those in the eligible set who purchased insurance. If purchasing insurance is viewed as "good" or "responsible" behavior, the plan could be described as one that gives equal tax cuts to everyone who engages in responsible behavior. In either case, the credit paid to those who had already purchased insurance does not represent a reallocation of productive resources from the private to the public sector; instead, it represents a transfer to insurance purchasers away from whoever else might have received the transfer.

Compared to the uninsured with equal levels of total compensation, the insured will have less to spend on other items of consumption, since they have chosen to divert more of their compensation to health insurance. They and their families may even suffer other deprivations (less decent housing, less educational spending) than those who take jobs that do not reduce wages to pay for insurance. If we knew the impact of obtaining insurance on other aspects of families' spending, we might well judge the insured lower income to be more deserving of a tax reduction.

Now suppose that expected expenses under the benchmark policy vary across potential insurance purchasers; that is, there is variation in "risk". If a uniform dollar credit is provided, the effect on insurance purchasing should be approximately inversely proportional to the individual risk-level if individual market premiums reflect risk. However, for equity reasons it may be desired to vary the credit with risk; it may also be desirable to do so for those whose risk is so high that income effects (in terms of the value of the premium relative to total income) are large enough to seriously affect their likelihood of insurance purchasing. (More on this is provided below.)

Now suppose the benchmark policy is altered so that it is less comprehensive and therefore carries a lower premium. If the credit were kept at the same level, higher proportions of the relevant population would buy some insurance. The average level of coverage per insured person would fall, but the proportion of people without any insurance at all would also fall. Whether the average level of coverage per person eligible would rise or fall is unclear. In the limit, if the minimum policy's premium equaled the credit (or, equivalently, if the only requirement to qualify for the credit was buying a policy that cost at least as much as the credit), one would expect everyone to become insured. Insurance is free. No out-of-pocket premium would be required, and insurance of any positive amount should be worth something. (More on this is provided below, as well.)

An alternative to a fixed dollar or "closed end" tax credit is a credit that is a specified proportion of the policy premium (e.g., 25 percent). If there is a single benchmark policy that is eligible for credit and individual risk-level is uniform, there is no difference between a proportional credit and a fixed dollar credit equal to this proportion times the benchmark policy's premium. In the more reasonable case in which the benchmark policy is only a minimum, and matching payments continue to be made for the premiums of more generous coverage, proportional credits are inefficient because they encourage additional coverage worth less than its cost. However, proportional credits are a partial (though very crude) substitute for risk adjustment. They are also

appropriate if there is some positive social value attached to additional coverage beyond the minimum benchmark level.

Who in the population of lower middle-income workers and dependents might be made eligible for tax credits? We assume that it will never be desirable to offer credits only to those currently uninsured. While this might work the first time, eventually it will provide everyone with incentives to drop coverage so as to be eligible for the credit.

There are two practical options here. One is to make eligible for credits at a given income level only those who currently are not offered employment-based insurance. The other is to make every worker at that income level eligible. In this latter case, someone who receives a credit could not at the same time receive the benefit of the tax exclusion of any employer payments; such payments must in some fashion be added to taxable income before computing the credit.

The second option makes credits attractive to all workers for whom receiving the credit is more advantageous than paying taxes on the amount no longer excluded. The first option offers an incentive for workers for whom the credit is more attractive than the exclusion to move to jobs in which no employer-paid insurance is offered. If some workers currently offered employment-based insurance for whom the credit is more attractive choose not to change their situations, the total amount of tax credits paid will be less than in the situation in which the credit is offered to all workers who choose it.

It is plausible that, at least in the short run, workers currently offered insurance who would gain from the credit may fail to change their situation. Changing jobs or replacing the employer payments with wage income will be inconvenient for some, and inefficient for others. The main tradeoff between these two options is therefore a lower level of tax credit payments when eligibility is limited, traded off against sometimes-strong incentives to change jobs or restructure to mix of compensation between money wages and paid health benefits. In some cases, an existing group insurance plan might be a casualty of the tax-credit-induced switch away from an employer-paid

tax exclusion option. The other consideration (not really a tradeoff) is that the higher credit payments to those already purchasing insurance (all formerly insured workers under the first option, those who were buying nongroup coverage under the second) are transfers that are unequivocally more equitable than limiting the credit to those who were formerly uninsured. Those who had been purchasing insurance would be making the same or greater sacrifice to obtain coverage as those formerly uninsured who receive the credit and then purchase; they therefore deserve to pay the same net taxes. The only sense in which it is "inefficient" to subsidize those who were formerly insured is if the social objective is the welfare of those who manage (or are responsible for) the federal budget.

However, it is useful to note here that accepting a fixed credit that is less in dollar amount than the value of the exclusion one currently experiences may be desirable if the policy that can be obtained with the credit is more attractive than the policy associated with the exclusion. A policy could be more attractive either because it represents a different type of insurance (e.g., *not* a managed care plan) or because the employee's total net premium payment is lower than the policy associated with the exclusion. In a sense, the number of people who turn in expensive exclusions for cheaper credit would be a measure of the distortion presently caused by the exclusion.

Estimating the Impacts of Tax Credits.

There has been an explosion of efforts to estimate how many net new persons would be induced to become insured under various tax credit proposals, and the resulting total value of tax reductions caused by the availability of credits. In what follows we offer estimates which are novel in the following way. They are the only estimates of which we are aware that are explicitly based on a theory and data that determine which persons will be better off by choosing credits rather than by remaining uninsured. We call our estimates "synthetic" because they are based on models of choice of those workers made eligible for credits under specific credit proposals, rather than

estimated from behavior of possibly (but not necessarily) similar consumers in situations similar (but not really identical) to those that would prevail under a particular tax credit plan.

One key insight in our approach is based on the observation that the great bulk of the working uninsured had, in a sense to be defined, an opportunity to obtain group insurance coverage at tax-subsidized prices which they rejected. Since they chose not to take advantage of that opportunity, it is highly likely that their reservation price is below the price they could have paid but did not. It follows that any tax credit proposal will only become effective if it can reduce the net premium for insurance below the level that prevailed in the rejected opportunity.

Suppose, for example, that we consider a worker in an occupation in which the typical firm size is 20 workers, and suppose this worker's marginal tax rate (income plus payroll) is 23 percent. Suppose that the loading for this size group is 30 percent of premiums. The net loading this person might expect to pay is therefore approximately seven percent of premiums. Suppose finally that we observe that the person remains uninsured—because he choose a job in a firm that does not offer benefits.

If we assume that this worker could have worked in a typical firm that did offer benefits and chose not to do so because he preferred the higher wages or other advantages of his current job, we could conclude that this person's reservation price is below 1.07 of his expected expense. With a tax credit applicable to individual insurance with loading assumed to be 40 percent of premiums, this person will surely not use the credit if it does not reduce the net loading on that policy below seven percent. If it does not offset this much of the nongroup premium, the only reason to use it is if the nongroup policy is more to the person's tastes than any group offering. In this particular example, using the credit will only become generally attractive when it covers about a third of the nongroup premium. That is, the credit has to be large enough to match the rejected tax subsidy-group loading combination before it can begin to make a serious dent in the numbers of

uninsured. If one's marginal tax rate is higher or the group is larger than in the example, the credit will have to be larger still to become effective.

This story obviously permits of exceptions. On the one hand, there may be those with reservation prices above the tax subsidized group price but below the unsubsidized nongroup insurance price who are "trapped" in jobs where no insurance is offered, even though they would willingly accept lower wages to pay for it. While some percentage of uninsured workers would surely purchase coverage if they were offered it at the tax-subsidized group premium but are unable to obtain a job that offers insurance in exchange for lower wages, there must be some individuals, on the other hand, who would prefer to be uninsured but are "trapped" at jobs which offer insurance. Indeed, some uninsured workers (about 20 percent on average), are at firms at which group insurance is offered but with employee premiums (Cooper and Schone, 1997); for them, the reservation price of insurance must be below the employee premium.

Two Models, Two Estimates.

We now illustrate likely responses to various amounts and types of tax credits to describe actual and potential insurance purchasing in response to tax and other subsidies and price changes. The first method we develop uses employment and insurance status data from individuals in the first round of the 1996 Medical Expenditure Panel Survey (MEPS) to impute the proportions of individuals purchasing insurance at various "net" prices. The second method we develop uses medical expenditure data from the same survey to attempt to determine reservation prices of the uninsured more directly.

This first method is more closely related to the theory outlined above. We determine for each family with at least one full-time worker the average net loading they would face in the group market given their job (or the nongroup market for the self-employed) and determine the proportion insured at each level of net loading. Specifically, we first determine the median number of workers

per firm for each of twelve industries identified in the MEPS, and then, using estimates for group insurance loading by firm size in Phelps (1997), determine each worker's average administrative loading based upon the industry in which they are employed. We define four different average firm sizes, with values for administrative loading between fifteen and thirty percent of benefits. Then, for each family, we determine the administrative loading they face (i.e., the lower of the two for dual-earner couples) and their marginal tax rate (income plus payroll) based upon their total family income and family structure; here, there are six different marginal income tax rates ranging from zero to 39.6 percent, with 8% payroll added to each.

We represent the net loading (commonly termed the "price" of insurance) each family currently faces as $L_N = (1 - Et)(1 + L_A) - 1$, where L_A is this administrative loading as a proportion of expected benefits, E is the average fraction of the premium paid by the employer (based upon summary data from the MEPS Insurance Component), and t is their marginal tax rate. For families with only self-employed workers, the net loading they currently face is simply the administrative loading in the nongroup market, which we assume to be either 30 percent of premiums ($L_N \cong 0.429$) or 40 percent of premiums ($L_N \cong 0.667$).

We then consider the effect of a tax credit defined to be a given proportion of the total nongroup premium; i.e., it is essentially risk-adjusted equivalently to whatever risk characteristics the individual insurance market uses to rate premiums. We assume here that the credit is applicable to a standard benefits package which does not vary. (We consider the effect of differing plan generosities somewhat in our second model.) Setting the loading for individual insurance initially at 30 percent of premiums, we then reduce the "net" loading by the amount of the tax credit, and assume that the proportion of (otherwise identical) individuals who will buy individual insurance at any given loading is at least as much as the proportion that would have purchased group insurance at the same loading.

Specifically, we first estimate a probit model of the likelihood of being privately insured as a function of this net loading, as well as multiple other control variables posited to be correlated with both the demand for insurance and the average net loading that families face; most importantly, these include family income, education, and age.[3] (We do not control for the size of the firm the person actually works for, since people with weak tastes for insurance would be expected to choose to work for small firms, thus biasing the estimates.) Results of this estimation are shown in Table 2. The overall results from this demand estimation essentially indicate for each individual a predicted probability of being insured as function of their various demographics and the net loading they face. Thus, the effect of facing a lower net loading can be simulated simply by giving each individual the lessor of their family's current group net loading or the credited non-group net loading. This then generates for each individual (whose credited premium is lower than their tax-subsidized group premium) a new predicted probability of being insured as a function of the proportional tax credit.

Using this Model One methodology, the estimated effects of tax credits of 25, 33, 50, 66, and 75 percent of the individual insurance premium—assumed to have loading equaling 30 percent of premiums—are shown in the top half of Table 3. Results are shown for all income levels and for both low- and high-income levels separately, where we define low- and high- income as having total family income either below or above 300 percent of the poverty level adjusted for family size. As noted above, because the net loading under group insurance is generally much less than that under individual insurance, it will take a fairly sizeable credit to prompt the uninsured who rejected a group insurance option to begin to buy insurance.[4] For example, we find that if the credit is 25 percent of individual insurance premiums, virtually the only persons who will be newly enticed into the market will be some of those self-employed whose only option was nongroup insurance initially.

Among low-income workers and dependents, the current proportion uninsured is 30.7 percent. Smaller tax credits do not do much good in reducing the number of low-income uninsured, but a 50 percent credit reduces this proportion by 51.7 percent (to 14.8 percent uninsured, 85.2 percent insured) and a credit of two-thirds of the premium would cause almost three-fourths (74.2 percent) of these low-income uninsured to seek coverage. The proportion uninsured among higher-income workers and dependents starts out lower (at 10.3 percent) and falls less dramatically to 5.0 percent at a credit equal to half of their nongroup premium.

Results shown in the bottom panel of Table 3 instead use the assumption that administrative loading in the individual insurance market is 40 percent of premiums. (For reasons discussed in Pauly et al. (1999), loadings in this market reasonably may fall in the range of 30 to 40 percent) Clearly, the higher net price here induces fewer individuals to become insured. The main point here is that the loading in the nongroup market has an important impact on the effectiveness of tax credits in stimulating insurance purchase, and that current uncertainty about what this loading is or could be have sizeable impacts on estimates of the effects of credits.

Of course, as noted earlier, some individuals who are currently insured through their employers—particularly those with low incomes in small groups, and hence low marginal tax rates and high administrative loading—will also take advantage of these tax credits. The final column of this Table then shows the number of currently group-insured that would use credits for the individual market. For lower credits, few individuals drop group coverage as their tax-advantaged group price is lower than those generated by the individual insurance tax credits. However, larger credits can have a substantial number of individuals switching to individual insurance—thus increasing the program's "cost per newly insured," although as we argue earlier, such costs are actually properly viewed as transfers of wealth. (The large number of high-income individuals taking advantage of these credits—and thus dropping tax-subsidized group coverage—in the results from the simulation model presented here occur simply because we included no income-

related eligibility criteria for the use of these credits in our model. Such criteria are likely to be advocated by policymakers on grounds of equity and should be easily implemented without resulting distortions in behavior.) Most importantly, there is only a narrow window of credit values in which additional coverage is stimulated but group insurance is not decimated. Of course, if equal credits were offered regardless of how and whether insurance is initially obtained, there would be a much smaller switch out of group coverage but more "cost" (again, actually transfers) the government would pay to taxpayers.

Model Two: The above technique obviously assumes that one can translate behavior from the group market to the individual market, and does not pay attention to particular individual characteristics that may make seeking insurance compared to being uninsured more or less attractive. A second method, to compare with the results of the first, attempts to estimate reservation prices directly, by examining variations individual risk level (expected expense). We assume that a person currently uninsured whose available premium is reduced by a tax credit will choose to be insured if his or her utility is higher buying insurance than it would be if the person remained uninsured. The credit is usually less than the assumed individual insurance premium, so the person will only buy if the gain from becoming insured, i.e., their reservation price, is less than the net premium to be paid. There are in general four components of the gain from becoming insured: a reduction in expected out-of-pocket payments with insurance, a reduction in costs associated with either receiving charity care or bill collection and bankruptcy for unpaid bills, a reduction in risk due to the variation in out-of-pocket expenses, and the value of the additional care used because of moral hazard.

To model the choice of purchasing insurance versus decided to remain uninsured, we use a simulation model based upon this expected utility theory that is quite similar to one we developed for determining individual choice between two insurance plans differing in generosity (Pauly and

Herring, 2000). Starting with the distribution of actual expenses (both total and out-of-pocket) for currently uninsured individuals aged 18 to 64 in the MEPS data (N = 2218), the first step is to generate a distribution of expenses (both total and out-of-pocket) for these individuals as if they were insured in a benchmark policy. We begin with considering a fairly comprehensive benchmark policy—one with a $200 deductible, 20 percent coinsurance, and a $1500 out-of-pocket maximum. To inflate the uninsured expenses to insured expenses for this set of currently insured adults, we use the American Academy of Actuaries (1995) "induction" methodology which uses a set of "moral hazard" induction parameters to adjust total expenses based upon the change in out-of-pocket costs.

We also generate an alternative pair of uninsured and insured expense distributions by starting with the expenses for currently insured persons in the MEPS data (N = 7598) and reducing their expenses with this AAA methodology to what they would be if they were uninsured. In determining what proportion of total uninsured expenses would be paid out-of-pocket, we use results from Herring (2000) which document (by income level) how the proportion of expenses paid out-of-pocket decreases as the magnitude of total expenses increases. For the results using this deflated expense distribution from the currently insured, the sample is re-weighted to be consistent with differences in age, gender, and health status between the insured and uninsured.

We then determine for each uninsured individual (i.e., either each currently-uninsured individual in the MEPS or each re-weighted currently-insured individual in the MEPS with deflated total expenses) their reservation price directly as the sum of the following three or four components: the change in expected out-of-pocket expenses if they were insured, the change in risk due to the variation in out-of-pocket expenses, the change in consumer surplus, and (in some estimates) a change in utility associated with avoiding charity care and/or bad debt. Like that from our prior simulation of insurance choice (Pauly and Herring, 2000), the individual's expected expenses are determined by a weighted average of their actual expense and their average "cell"

expense, where we define twenty cells based upon the interaction of five ten-year age intervals, gender, and excellent or very good self-reported health status versus good, fair, or poor. We assume the utility gain associated with the avoidance of charity and bad debt equals a proportion (averaging around 30 percent, but increasing with income level) of the total amount received free; this is similar in spirit to the modeling of the disutility associated with managed are restrictions in Keeler et al. (1996). We estimate the valuation of risk as one-half the Arrow-Pratt absolute risk aversion coefficient times the variance in out-of-pocket costs. We use a coefficient of 0.00095 (equal to that used in our prior simulations of insurance choice) and apply this to the "cost" of receiving free care when applicable. Finally, we estimate the value of consuming additional care as one-half times the change in expected total expense.

The resulting reservation prices we estimate then vary considerably depending on which of the two methods we use to generate predicted expenses and on which assumption we make about the utility "cost" of bad debt and/or charity care. Using the uninsured's original expense distribution inflated to give an insured distribution and assuming no disutility from receiving free care generates a reservation price for the uninsured that averages $128; assuming a cost of receiving free care averaging thirty cents per dollar gives an average reservation price of $566. Using instead the re-weighted currently insured's expense distribution deflated to give an uninsured expense distribution gives larger reservation prices: an average of $230 with "costless" free care and an average of $1348 with costly free care.[5] However, in each of these four cases, how the estimated reservation prices vary with respect to age, gender and health status is identical. As one would expect, the willingness-to-pay for insurance increases with characteristics predicting higher medical expense, i.e., female gender, older age, and health status reported as good, fair or poor.

Finally, we assume that the individual insurance premium is risk-rated based on age and gender only, and generate our estimates by determining average benefits for this benchmark policy using the AAA-adjusted distribution of expenses of the MEPS currently insured, and marking them

up assuming 30 percent administrative loading. The top half of Table 4 presents results of the reduction in the number of uninsured for proportional tax credits of 25, 33, 50, 66, and 75 percent of the individual insurance premium for each of these four cases described above.

For either assumption on the source of the predicted expense distribution, the impact proportional credits on insurance purchases for people who attach no disutility to charity care and/or bad debt are quite small—a credit of 50 percent generates only 1.3 to 2.7 percent of the uninsured switching. Those who do switch are predominantly those with poor health. The reason for this small impact is that the data indicates a very modest impact of insurance coverage on out-of-pocket payments for the uninsured. Those who are uninsured pay out-of-pocket on average for about 30 percent of the cost of their care. Under the benchmark policy that fraction is only reduced to 15 to 20 percent but the premium charged must cover the cost of all insured care, including that which was formerly "free".

In contrast, if people do prefer to avoid incurring bills they cannot pay, the credits have impacts in the range of the estimates generated by Model One. Even using the uninsured's deflated expense distribution, the proportion of uninsured who become covered is 30.3 percent with a 50 percent proportional credit and 68.4 percent with a 75 percent credit. Those across both genders and all age groups take-up insurance using these proportional credits, but within each age/gender "cell", those with poor health are more likely to switch. For credits of 50 percent and larger, there is nearly complete switching if we instead use the insured's deflated expense distribution. These results serve to show the range of possible values the impact of proportional credits may have, and show the importance of the attitudes of non-poor uninsured people about free care.

We also estimate impacts of fixed dollar credits equal in average cost to the proportional credits described above. As shown in the bottom half of Table 4, there is generally much more of an effect. With the most conservative assumptions, 30.9 percent become newly insured with a $689 fixed dollar credit would cover half of an average individual insurance premium for those

who are currently uninsured. Since a fixed credit covers a larger proportion of the age-adjusted premium, the newly insured are largely young persons of both genders, including many of those with less than good health. Attaching disutility to free care increases the estimated impact, but not by as much as in the proportional case. Generally, larger fixed dollar credit of about $1000 are shown to be used by at the least half of the uninsured.

An Optimal Partial Coverage Policy.

Thus far we have limited our analysis to only fairly comprehensive plans and tax credits that would cover some portion of their premiums. However, we now consider the possibility that a fixed credit can be used by individuals to purchase any policy they want. That is, what kind of limited-coverage policy would the uninsured obtain if they simply just used the credit and none of their own money to buy insurance? To estimate such an optimal insurance policy, we proceed by first determining combinations of deductibles and upper limits on total benefits that a given tax subsidy could cover for a particular uninsured individual. Then, given the set of financially feasible policies, we determine the expected utility for each deductible and upper limit pair and select the one with the highest expected utility.

Here, we concentrate on females between the ages of 18 and 39. Relative to the variation in expected medical expenses across all adults under age 65, the variation in expected expenses within this group is minimal; moreover, the average expense of this sub-population is close to the average across all non-elderly adults. First, we take the distribution of expenses of all currently insured females aged 18-39 in the MEPS data (N = 1835), and for various deductibles, find the corresponding upper limit on benefits such that total benefits equal exactly $700 thus giving an individual insurance premium of $1000 assuming there is 30 percent administrative loading. In doing so, we again use the AAA methodology described above to generate a realistic expense distribution for each particular deductible and upper limit pair. Compared to average total

expenses of about $1577 for "fully-insured" younger females in the MEPS data, we estimate their total expenses would fall to about $1220 in these "partially-insured" policies—leaving about $520 on average to be paid out-of-pocket (some of which of course is above the deductible and some of which is above the upper limit). There is some variation however in these $1220 and $520 amounts as the different deductible and upper limit pairs have slightly different effects on total expenses from applying the moral hazard adjustment. Various financially feasible combinations of deductibles and upper limits are shown in the first two columns of Table 5. For instance, $1000 could purchase first-dollar coverage with an $1616.9 upper limit, a $1000 deductible paired with a $7375.2 upper limit, or a $1972.4 deductible with no upper limit.

For each feasible policy, we then determine its expected utility incorporating the same framework as Model Two—that is, examining the plan's expected out-of-pocket expenses, valuation of risk, and consumer surplus. What makes examining these upper limits on benefits interesting is the potential for these "partially-insured" individuals to obtain free care once they surpass their policy's upper limit, thus lowering both the magnitude of and variation in out-of-pocket expense. We consider two cases. The first assumes that individuals will receive no free care at all. For the second case, we use Herring's (2000) results for the proportions the uninsured pay out-of-pocket as total expense increases and income varies. Generalizing for those with incomes between 200 and 250 of poverty and adjusting downward the amount received free for moderately-sized bills, we assume that those who exceed their upper limit but have total expenses under $20,000 can expect to pay out-of-pocket for only half of the amount remaining and assume that those whose bills exceed the upper limit and are larger than $20,000 pay out-of-pocket for 4.5 percent of the remainder.

Based upon these varying assumption, we can then calculate the expected utility of each policy as the sum the following: one and a half times the total expected expense, the expected out-of-pocket expense, the "cost" of free care (if applicable), and the valuation of risk. Consider first

the case where individuals can expect to receive no free care once their upper limit is exceeded. Expected out-of-pocket expenses, valuations of risk, and resulting expected utilities are shown in the upper half of Table 5 for various feasible policies. As one would expect, the risk of paying large out-of-pocket expenses once one exceeds their upper limit increases exponentially as that upper limit decreases. Thus, for this case of no free care availability, we observe the result that utility is maximized when there is no upper limit on benefits; i.e., there is expected utility of $1080.9 when a deductible of $1974.2 is chosen with full coverage above that deductible.

Results for the second case where we make the assumptions described above about the availability of free care after one exceeds their upper limit are shown in the bottom portion of Table 5. Here, utility is maximized at $1200.6 for a deductible of $525 and an upper limit of $4072. This optimal policy is one that trades off the cost from raising the deductible and hence paying more out-of-pocket to cover the deductible versus the benefit from raising the upper limit to a value closer to an amount at which free care and/or bad debt increasingly covers larger bills.

This analysis should make clear the point that by permitting a reduction in the generosity of the required coverage needed to qualify for the tax credit, all individuals would be expected to (rationally) purchase at least some limited form of insurance coverage, and thus take-up rates of the uninsured should be 100 percent. But here, too, what particular plan is optimal for a particular individual depends critically upon their expected medical expense, risk-aversion, and both the ability of and the attitudes regarding individuals obtaining free care.

Conclusions.

Obviously many different proposals have been made for adding refundable tax credits and reforming the tax treatment of employer-paid group health insurance. The options considered in this paper, like most current proposals, do not involve requiring individuals or firms to pay higher taxes if they continue to provide employer-paid insurance. (See Pauly and Goodman (1995) for an

early discussion of this issue.) It is the possibility that some employers or firms might be required to pay higher taxes that yields the result, in some analyses, that tax credit proposals might cause some people currently receiving group coverage to drop it (Cox and Topoleski, 1999); these analyses are largely irrelevant to the present debate on tax credit options. Those schemes which do envision removal or limiting the current tax subsidy all assume as well that there will be a mandate (individual, employer, or employer-enforced individual) to obtain subsidized coverage (Butler, 1991; Pauly et al.,1991).

The Key Tradeoff: Our simulation estimates serve to illustrate numerically a key tradeoff suggested earlier. For a given amount "spent" on credits, there is a tradeoff between the *breadth* of the reduction in the number of uninsured and the *depth* of the increase in the coverage they take. There is also an interaction with risk levels. At one extreme, a flat credit which does not specify a minimum policy will cause all of the previously uninsured to obtain some insurance coverage. At very low risk levels, the previously uninsured will probably be able to buy coverage society would regard as "adequate." (There is no objective standard for "adequate coverage.") However, high risks unwilling or unable to pay more of the premium themselves will have to select coverage with deductibles and (especially) upper limits. While the new coverage will provide both more protection against out-of-pocket payments and more encouragement for the use of beneficial care, the protection and encouragement will obviously be smaller than if nominal coverage was more generous.

Using fixed dollar credits and the requirement to buy an "adequate" benchmark policy will cause some of the uninsured to reject the subsidy and remain uninsured. Lower risks and those who place high value on avoiding being a charity or bad debt case will move to coverage which, by definition, is "adequate." Compared to the alternative discussed in the previous paragraph, there

will be fewer people converted from uninsured to insured but those who are will have a larger effect on their use and protection.

Finally, using proportional credits moves fewer people from the ranks of the uninsured but selects more of those it does cause to become insured from the higher risk categories. However, it also may stimulate (and subsidize) the purchase of coverage in excess of the benchmark level; it could lead to "lavish plans," especially among those who were formerly insured but can become eligible for the credit.

Which of these three alternatives is best? The answer clearly cannot be given with objective certainty; it all depends on how the different patterns of changes are valued. If one invokes the principle that the first few dollars of insurance coverage (like the first few dollars of anything beneficial) are likely to do the most good, a design that places rather light obligations on the comprehensiveness of coverage and uses fixed dollar credits might make sense. But ultimately the choice itself will require consensus on exactly why "we" want the uninsured to become insured, and what benefits we expect to accrue to all from that change.

Another key issue about choosing tax credit options is how generous the credit is to be. At a given income level, small credits will have little effect on the number of uninsured, whereas large credits will have large effects. If we focus on the large majority of the uninsured who have incomes above the poverty line, our general conclusion is that credits will need to be substantial to make much of a dent in the number of uninsured. For low-income workers and their dependents below 300 percent of the poverty line where the uninsured are disproportionately found, we conclude that substantial reductions in the numbers of uninsured will require credits in the range of approximately a half of the individual insurance premiums, with credits needed to be even greater than 50 percent for families with incomes at the bottom of this range. Thus another important tradeoff is between reductions in the number of the uninsured and tax revenues that could be spent on other public programs.

However, note that much of the "cost" of tax credits does not represent a reallocation of real resources away from other uses and toward the health care needs of the previously uninsured. Instead, much of the credit effectively represents a tax reduction for the majority of lower middle-income people who formerly had obtained health insurance for themselves and their families in some fashion. Limiting eligibility for the credit to a subset of those at the same income level engaging in the same health insurance purchasing behavior can reduce the "cost," but at the real expense of horizontal inequity and substantial distortion in the labor market.

To make any such judgments rationally, however, one would need more information than just a head count of the formerly uninsured. The missing piece of information is one that is really essential for the entire policy exercise: how much of an improvement in health is generated by the presence of insurance coverage (compared to its absence) for people at different income and risk levels? It is possible, for example, that insurance coverage for people who are initially low risks might produce more of an improvement in health than coverage for those initially high risks. Almost all of the research on the impact of insurance coverage either looks at the uninsured as a group or singles out poor uninsured people, but the most relevant question is the amount of good health insurance would produce for a lower middle-income family (compared to being uninsured). As noted elsewhere by Pauly and Reinhardt (1996), our failure as researchers to produce this information on effectiveness makes more difficult the effort to persuade our fellow citizens to support tax credits or any other programs to reduce the numbers of the uninsured.

The fiscal design of tax credit programs is not the only influence on the number of uninsured. Most programs envision making everyone who is uninsured (at some income level) eligible for subsidy. This design is in strong contrast to the Medicaid program, for which only some low-income uninsured are eligible. The universal character of tax credit programs would thus allow the government to direct subsidies or credit vouchers to everyone below a certain income level who is not insured; it would not be necessary for people to apply. In addition, once

people at some income level had all been made eligible for credits judged to provide adequate subsidies to permit them to afford insurance, there would be less justification for someone to remain uninsured, and therefore less need to have a permissive charity care or bad debt policy applied to that person. Changes in the financial responsibilities imposed on uninsured people might themselves stimulate people to become insured, although some safety net will need to remain for those who truly fall through the cracks. Finally, rewarding the great majority of lower middle-income people who do choose to be insured with a substantial tax reduction might both call attention to the social value of being insured and offer the uninsured further incentive to change their status. While it is unlikely that the number of uninsured will ever be literally zero, carefully designed credit programs can both reduce the numbers of uninsured and improve the equity of tax treatment of the insured.

Notes.

[1] The MEPS data—at least that which currently publicly available—does not indicate whether workers offered coverage were offered single or family coverage, so this represents somewhat of an upper bound for workers *and* dependents offered coverage. However, based upon the 1993 Robert Wood Johnson Employer Survey, over 97 percent of firms offering insurance offer family coverage, so we consider these 41.6 and 38.1 percent estimates to be reliable. Thus, many uninsured dependents of workers offered coverage are indeed foregoing insurance as well—although perhaps at a substantial fraction of the total premium.

[2] This calculation is even likely to be an understatement of the size of the tax subsidy as it is believed that the incidence of the employer's payroll tax of 8 percent is on wages as well. However, for the purposes here, and further below, we only consider the employee-paid payroll tax.

[3] We estimate one model using the full sample of workers and their dependents not covered by public insurance, and thus we are not able to obtain different coefficients for the net loading for low- and high-income individuals separately. However, there is no consensus on how the price elasticity for insurance varies by income: Higher price elasticities for low-income individuals have been documented by both Holmer (1984) and Sheils et al. (1999). On the other hand, Jon Gruber (1999) builds into his simulation model a price elasticity that decreases as income decreases—arguing "…that as income falls, individuals are less likely to take up subsidies which are less than 100%, as disposable income is needed for other expenditures that may be perceived as more urgent (such as food and housing)." (p. 39). Probit models that we estimated for low- and high-income sub-samples bore no consistent patterns with respect to this net loading variable; thus, we use the full sample results for increased precision.

[4] Indeed this net loading under the current tax treatment of insurance averages -0.024 across all workers and their dependents, and averages 0.048 for those low incomes and -0.089 for those with high incomes. This is significantly higher lower than the net loading of 0.429 in the nongroup market—assuming loading equal to 30 percent of premiums.

[5] This discrepancy between the use of the two original expense distributions is related to whether the currently insured—given their age, gender, and health status—would continue to be low consumers of medical care (i.e., the AAA methodology allows for the retention of idiosyncratic differences in consumption upon inflating their expenses) or would consume amounts of medical care equal to their insured counterparts—given their age, gender, and health status.

References.

American Academy of Actuaries, 1995, "Medical Savings Accounts: Cost Implications and Design Issues," AAA Public Policy Monograph.

Butler, S., 1991, "A Tax Reform Strategy to Deal with the Uninsured," *Journal of the American Medical Association* 265.19, 254l-2544.

Cooper, P., and B. Schone, 1997, "More Offers, Fewer Takers for Employment-Based Health Insurance: 1987 and 1996," *Health Affairs* 16.6, 142-149.

Cox, D., and C. Topoleski, 1999, "Individual Choice Initiatives: Analysis of a Hypothetical Model Act," EBRI-ERF Policy Forum, May 5th.

Gruber, J., 1999, "Tax Subsides for Health Insurance: Evaluation the Costs and Benefits," Prepared for the Kaiser Family Foundation.

Herring, B., 2000, "Access to Free Care for the Uninsured and its Effect on Private Health Insurance Coverage," mimeo, University of Pennsylvania.

Holmer, M., 1984, "Tax Policy and the Demand for Health Insurance," *Journal of Health Economics* 3, 203-221.

Keeler E., J. Malkin, D. Goldman, and J. Buchanan, 1996, "Can Medical Savings Accounts for the Nonelderly Reduce Health Care Costs?" *Journal of the American Medical Association* 275.21, 1666-1671.

Pauly, M., P. Danzon, P. Feldstein, and J. Hoff, 1992, *Responsible National Health Insurance*. Washington D.C.: AEI Press.

Pauly, M., and J. Goodman, 1995, "Tax Credits for Health Insurance and Medical Savings Accounts," Health Affairs 14.1, 125-139.

Pauly, M., and U. Reinhardt, 1996, "The Rise and Fall of Health Care Reform: A Dialogue Between Mark Pauly and Uwe Reinhardt," in *Looking Back, Looking Forward: The Institute of Medicine's Rosenthal Lectures*. Washington, D.C.: National Academy Press.

Pauly, M., and B. Herring, 1999, *Pooling Health Insurance Risks*. Washington, D.C.: AEI Press.

Pauly, M., and B. Herring, 2000, "An Efficient Employer Strategy for Dealing with Adverse Selection in Multiple-Plan Offerings: An MSA Example," forthcoming, *Journal of Health Economics*.

Pauly, M., A. Percy, and B. Herring, 1999, "Individual Versus Job-Based Health Insurance: Weighing the Pros and Cons," *Health Affairs* 18.6, 28-44.

Phelps, C., 1997, *Health Economics*. Reading, Mass.: Addison, Wesley.

Sheils, J., P. Hogan, and R. Haught, 1999, "Health Insurance and Taxes: The Impact of Proposed Changes in Current Federal Policy," Prepared for the National Coalition on Health Care.

Thorpe, K., 1999, "New Estimates of the Federal Costs and Numbers of Newly Insured in Senator Bradley's Health Insurance Proposal," mimeo, Emory University.

TABLE 1
Insurance Status for the U.S. Population:
Full-time Workers and their Dependents

	Percent of Population:			
	All Individuals	*Excluding Public*	*Privately Insured*	*The Uninsured*
All Income:				
Public insurance[a]	9.6	0.0	0.0	0.0
Current job offers insurance[b]	77.6	80.9	91.7	38.1
Private insurance	72.1	79.8	100.0	0.0
Employment-based	67.8	74.9	94.0	0.0
Nongroup Insurance	4.4	4.8	6.0	0.0
Uninsured	18.3	20.2	0.0	100.0
200-250% of Poverty Line:				
Public insurance	8.8	0.0	0.0	0.0
Current job offers insurance	80.0	80.5	91.2	41.6
Private insurance	71.6	78.5	100.0	0.0
Employment-based	67.7	74.3	94.6	0.0
Nongroup Insurance	3.8	4.2	5.4	0.0
Uninsured	19.6	21.5	0.0	100.0

Source: 1996 Medical Expenditure Panel Survey Data (N = 13,344)

Note: Since many individuals have more than one source of insurance, "hierarchical" assumptions were made in that public coverage dominates private coverage and group coverage dominates nongroup coverage.

[a] Public insurance includes Medicaid, Medicare, CHAMPUS, or any other federal or state program subsidizing coverage.

[b] Some individuals have employment-based coverage, but are not offered insurance through their *current* job, e.g., COBRA-continuation coverage or group coverage through a family member working *part-time*.

TABLE 2
Model One: Probability of Being Insured as a Function of Net Loading and Other Controls

Variable	*Mean*	*Probit Coefficient*
Insured / Intercept	0.798	-2.529***
Net loading	-0.024	-1.767***
Family income's percentage of poverty[a]	377.5	0.337***
Highest family education level	13.33	0.099***
Nonwhite	0.269	-0.365***
Male ages 0-9	0.070	0.456***
Male ages 10-17	0.065	0.358***
Male ages 18-24	0.047	-0.214***
Male ages 25-34	0.103	n/a
Male ages 35-44	0.108	0.295***
Male ages 45-54	0.079	0.446***
Male ages 55-64	0.038	0.585***
Female ages 0-9	0.069	0.462***
Female ages 10-17	0.062	0.474***
Female ages 18-24	0.045	-0.064
Female ages 25-34	0.095	0.284***
Female ages 35-44	0.106	0.485***
Female ages 45-54	0.078	0.623***
Female ages 55-64	0.034	0.622***
Northeast census region	0.188	n/a
Midwest census region	0.229	0.100**
South census region	0.361	-0.089**
West census region	0.221	0.046
Urban area	0.813	0.051
Number of Observations	11,564	11,564
Log Likelihood	n/a	-4584.4

Source: 1996 Medical Expenditure Panel Survey Data

Note: Sample includes all full-time workers and their dependents age sixty-four, excluding those with any form of public insurance.

[a] A logged value of the total family income as a percentage of the poverty level, adjusted for family size, is used in the probit model estimation.

*** Significant at 0.01 or better
** Significant at between 0.01 and 0.05
* Significant at between 0.05 and 0.10

TABLE 3
Model One: Effect of Tax Credits on the Uninsured,
All Full-time Workers and Dependents

	Predicted Percent Insured	*Percent Newly Insured:*	*Percent Reduction in Uninsured*	*Group Insured Dropping*
Assuming Nongroup Loading Equals 30% of Premiums:				
All Income Levels:				
Currently	80.0	n/a	n/a	n/a
25% Credit	82.6	2.6	13.0	2.8
33% Credit	84.0	4.1	20.2	34.7
50% Credit	90.3	10.4	51.7	100.0
66% Credit	95.1	15.1	75.5	100.0
75% Credit	96.6	16.7	83.2	100.0
Low Income—Below 300% of Poverty:				
Currently	69.3	n/a	n/a	n/a
25% Credit	72.7	3.4	11.1	6.8
33% Credit	75.5	6.2	20.0	79.0
50% Credit	85.2	15.9	51.8	100.0
66% Credit	92.1	22.8	74.2	100.0
75% Credit	94.4	25.1	81.9	100.0
High Income—Above 300% of Poverty				
Currently	89.7	n/a	n/a	n/a
25% Credit	91.5	1.9	18.0	0.0
33% Credit	91.8	2.1	20.8	3.5
50% Credit	95.0	5.3	51.5	100.0
66% Credit	97.8	8.2	79.1	100.0
75% Credit	98.6	9.0	86.9	100.0
Assuming Nongroup Loading Equals 40% of Premiums:				
All Income Levels:				
25% Credit	81.8	1.8	9.1	0.0
33% Credit	82.4	2.4	12.0	1.0
50% Credit	86.9	6.9	34.7	76.6
66% Credit	93.8	13.8	69.0	100.0
75% Credit	95.9	16.0	79.7	100.0
Low Income—Below 300% of Poverty:				
25% Credit	71.6	2.2	7.3	0.0
33% Credit	72.4	3.1	10.1	2.5
50% Credit	80.5	11.2	36.5	100.0
66% Credit	90.1	20.8	67.9	100.0
75% Credit	93.4	24.0	78.3	100.0
High Income—Above 300% of Poverty				
25% Credit	91.1	1.4	13.9	0.0
33% Credit	91.4	1.8	17.2	0.0
50% Credit	92.7	3.1	29.6	60.2
66% Credit	97.1	7.4	71.9	100.0
75% Credit	98.3	8.6	83.4	100.0

Note: Details of the simulation are provided in the text.

TABLE 4
Model Two: Effect of Tax Credits on the Currently Uninsured, Comprehensive Individual Insurance Plan with 30 Percent Loading[a]

	Reduction in the Uninsured			
	Originally Uninsured Inflated Expense Distribution		*Originally Insured Deflated Expense Distribution*	
	Costless Free Care	*Costly Free Care*	*Costless Free Care*	*Costly Free Care*
Proportional Credits:				
25% Credit	0.7	12.0	0.8	65.9
33% Credit	1.0	17.0	1.1	72.5
50% Credit	1.3	30.3	2.7	84.7
66% Credit	3.6	51.9	13.9	94.3
75% Credit	8.7	68.4	27.7	96.9
Fixed Dollar Credits:				
$345 (≈ 25%)	2.2	27.6	7.7	66.3
$459 (≈ 33%)	15.0	36.2	21.0	70.6
$689 (≈ 50%)	30.9	53.0	42.0	78.0
$918 (≈ 66%)	49.2	59.0	54.4	84.9
$1034 (≈ 75%)	53.6	60.9	54.8	87.8

Note: Details of the simulation are provided in the text.

[a] Comprehensive plan assumes a $200 deductible, 20% coinsurance, and a $1500 out-of-pocket maximum.

TABLE 5
An Optimal Partial Coverage Policy:
Premium Equaling $1000 for Females aged 18 to 39[a]

Assuming No Free Care is Available After Exceeding Upper Limit:

Deductible	*Upper Limit*	*Amount of Free Care*	*Out-of-Pocket Expense*	*Valuation of Risk*	*Expected Utility*
0.0	1616.9	0.0	506.4	4961.8	-3658.6
100.0	2095.1	0.0	525.0	4843.0	-3530.5
250.0	2790.5	0.0	539.0	4691.4	-3371.9
500.0	3951.3	0.0	546.5	4480.0	-3156.7
1000.0	7375.2	0.0	536.5	4013.6	-2695.4
1500.0	22625.0	0.0	521.3	2861.4	-1550.8
1750.0	62747.7	0.0	507.5	1141.9	161.9
1950.0	121370.6	0.0	496.1	280.6	1017.5
1974.2	None	0.0	494.8	216.5	1080.9

Assuming Some Free Care is Available After Exceeding Upper Limit:

Deductible	*Upper Limit*	*Amount of Free Care*	*Out-of-Pocket Expense*	*Valuation of Risk*	*Expected Utility*
0.0	1616.9	298.4	208.0	357.8	1154.3
100.0	2095.1	268.2	256.8	331.7	1168.4
250.0	2790.5	232.1	306.9	304.5	1177.5
500.0	3951.3	189.0	357.5	277.6	1177.9
525.0	4072.0	191.3	355.1	256.6	1200.6
550.0	4197.0	187.6	358.6	254.6	1199.8
1000.0	7375.2	133.4	403.1	221.9	1189.8
1500.0	22625.0	74.8	446.4	201.8	1161.2
1974.2	None	0.0	494.8	216.5	1080.9

Note: Details of the analysis—particularly the calculation of expected utility—are provided in the text.

[a] Policy is assumed to have no coinsurance and administrative loading equals 30 percent of premiums.