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TAX SUBSIDIES FOR HEALTH INSURANCE: EVALUATING THE COSTS AND BENEFITS

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ABSTRACT

The continued rise in the number of non-elderly Americans without health insurance has led to considerable interest in tax-based policies to raise the level of insurance coverage. This paper describes a detailed microsimulation model that has been developed to evaluate such tax-based polices, and its findings for the impact of polices on government costs and insurance coverage. I find that while tax subsidies could significantly increase insurance coverage, even very generous tax policies could not cover more than a sizable minority of the uninsured population. But there are several design features which can clearly make tax policy more effective: using tax credits rather than deductions; making credits refundable; and addressing the timing mismatch between when insurance purchases are made and tax refunds are received. I also document a clear tradeoff between the scope of tax subsidies and their efficiency.

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The dramatic rise and high level of uninsurance rates in the U.S., despite an economic boom that has had only one interruption in 15 years, is striking. In 1987, 14.8% of non-elderly Americans were without health insurance. Over the next decade, the percentage of the non-elderly population without insurance coverage grew by nearly 25% to 18.3%, so that in 1997 there were over 43 million uninsured Americans (Employee Benefit Research Institute, 1999). Particularly troubling is the significant increase in the uninsurance of children in the U.S.; despite dramatic increases in the expansion of public health insurance through the Medicaid program since the mid-1980s, the share of children without health insurance has grown by over 10% since 1987.

These trends have motivated considerable policy discussion at both the Federal and state levels. At the Federal level, they were one motivation for the ultimately unsuccessful attempt of the Clinton Administration to promote comprehensive reform of our health care system. The failure of this attempt has returned the policy focus to incremental reforms. Following the passage of the Child Health Insurance Program in 1997, most Congressional discussions have centered on the idea of using the tax system to subsidize the purchase of insurance by individuals. Tax-based approaches to expanding insurance coverage have a certain intuitive appeal. They would provide tax equity by providing financial benefits to those purchasing coverage individually that are now enjoyed only by the self-employed or those with employer-sponsored coverage. They would also rely on the private insurance system rather than a government-sponsored program that might carry stigma for some people. And finally, they can be seen as providing a tax cut rather than creating a more politically controversial new spending program.

Yet while the tax equity argument is compelling – especially given the estimated $100 billion that is now spent each year providing federal tax subsidies for the purchase of employer-sponsored health insurance[1] -- the ability of tax subsidies to meaningfully reduce the number of people uninsured remains uncertain and unproven. Moreover, the spectrum of tax-based approaches that have been proposed either formally or informally is quite large, ranging from deductibility of insurance costs for individuals to refundable tax credits that might cover most or all of the cost of typical health insurance policy.

In this paper, I assess the potential implications of a range of tax-based approaches using a new micro-simulation model developed specifically for this purpose. I examine how different characteristics of these proposals are likely to affect such outcomes as: the overall cost to the federal government, the number of the uninsured who would gain coverage, which income groups would benefit from the subsidies, and how those who now have employer-sponsored coverage would be affected.

[1]Sheils and Hogan (1999).

Part I: Tax Policy Towards Health Insurance - Current and Proposed

Current Tax Policy

The primary focus of current U.S. tax policy towards health insurance is the exclusion of employer paid health insurance premiums from the taxable income of employees. For example, if an employee is paid $30,000 per year in wages, and their tax rate on these earnings is 20%, then they take home only $24,000. But, if that same employee is paid $27,000 in wages and receives health insurance from their employer that costs the employer $3,000, then their take home pay is $21,600, and the total value of their compensation is $24,600. That is, due to the fact that employees are taxed on their earnings but not on the value of their health insurance, being "paid" in the form of health insurance rather than wages is more valuable. This is a major reason why private health insurance coverage is almost exclusively provided through the workplace in the U.S.; only about 9% of the privately insured don't have employer-provided insurance.[2] As noted above, the foregone revenues to the federal government through this tax preference amounted in 1998 to an estimated $65.9 billion through income taxation, and another $36 billion in payroll taxation (Sheils and Hogan, 1999). Further implications of our current tax treatment of health spending are discussed in Pauly (1986) and Gruber and Poterba (1996).

An additional small tax preference towards health spending is the availability of an itemized deduction for any medical spending, including on health insurance, above 7.5% of Adjusted Gross Income. Finally, for some workers, employee spending on employer-provided health insurance is tax subsidized as well. Firms that have a plan that qualifies under Section

[2]Author's tabulations from the March 1997 CPS.

125 of the IRS code can allow their employees to make their premium contributions on a pre-tax basis.

Advocates for the self-employed have long argued that there is an inequity in this system, because unincorporated self-employed businesses could not benefit from this tax preference towards health insurance. As a result, as part of the Tax Reform Act of 1986, the self-employed were allowed to deduct from their taxable income 25% of the cost of their health insurance, up to the amount of their self-employment income. This amount was subsequently increased, and will reach 100% by 2003 (Meyer, Silow-Caroll and Wicks, 1999).

This system of tax subsidies leaves three groups without tax subsidies for the purchase of health insurance:

- Those who work for firms that do not offer health insurance.
- Those who are not employees nor self-employed, such as the unemployed or early retirees (before the age of Medicare eligibility).
- The employee share of health insurance premiums for those employees whose firms do not offer a Section 125 plan (i.e. a "cafeteria plan") that allows them to make those contributions on a pre-tax basis.

Each of these holes represents a significant population. Roughly 16% of the non-elderly population is, at a point in time, not eligible for a tax subsidy to health insurance, and roughly 19% of insurance spending among those who are insured is not tax subsidized.[3]

[3]Author's tabulations from the March 1997 Current Population Survey

Proposed Reforms

The past few years has seen a variety of proposed reforms to the tax treatment of health insurance expenditures. There are a large number of potential approaches to expanding tax subsidies to health insurance. Any detailed proposals must, at least, address the following list of questions:

Deduction or Credit? Currently, the employer exclusion is a deduction, through which individuals' taxable income is effectively reduced by the amount of their health insurance expenditure. The actual reduction in taxes (i.e. the subsidy) depends on the individual's tax rate. The alternative is a credit, through which an individual's taxes are directly reduced by a fixed dollar amount, regardless of the individual's tax rate. One key difference between these approaches is that a credit provides the same amount of subsidy to all income-eligible taxpayers, while a deduction provides a subsidy that rises with the tax rate (so that it is higher for higher income taxpayers). Another difference is that the credit can provide a 100% subsidy to the cost of insurance for some individuals, while a deduction only provides a subsidy rate equal to the individual's tax rate (e.g. someone in the 15% tax bracket would receive a subsidy equal to 15% of the insurance premium). This is an important difference for health insurance subsidies because, of those uninsured who have positive tax liabilities, 90% are in the 15% tax bracket.[4]

Refundability? A key limitation of tax policy in increasing insurance coverage is that 45% of the

[4]Author's tabulations from the March 1997 CPS.

uninsured do not pay any taxes against which any subsidy can be applied.[5] If a tax credit was made refundable, as with our current Earned Income Tax Credit (EITC), it would reach even those potential participants with no tax liability. This would mean that the individual would receive a refund from the IRS equal to the amount of the credit.

Cap on the Subsidy? The current employer exclusion is unlimited, applying to all expenditures by an employer on health insurance. An alternative, for either a deduction or a credit, would be to cap the amount of insurance expenditure that is eligible for tax subsidization. This can be done by only qualifying a certain percentage of spending for the subsidy (as is currently done for the self-employed), or by capping the amount of spending that is eligible at some dollar level, or some combination of the two. This would lower the costs of the tax policy, but would also lower its value to potential participants and as a result limit use of the subsidy.

[5]Author's tabulations from the March 1997 CPS.

Income Limitations? Insurance status is fairly well correlated with income; 85% of the uninsured have incomes below the median household income level for their family structure.[6] As a result, the ability of tax policy to target a given amount of public dollars to the uninsured is enhanced if the availability of tax subsidies is income limited to some extent.

Which Populations? As noted earlier, there are three potential groups that can benefit from new tax subsidies: those who are not employed in an incorporated firm; those who work for a firm that does not offer health insurance; and those who work in a firm that does offer health insurance, but for whom the employee portion of health insurance contributions are made on an after-tax basis (e.g. no Section 125 plan is available). Tax subsidies can in theory be offered to only the first population, by restricting the new subsidy only to those not offered insurance; to the first and second, by qualifying only non-group (or non-employer provided) health insurance expenditures for subsidies; and to all three, by qualifying any out of pocket (non-employer) spending on health insurance for a subsidy.

Other Policies? Another important question is whether tax policies targeted towards non-group coverage should be accompanied by insurance market reforms that would make coverage more accessible for individuals buying coverage on their own. These could include requiring insurers

[6]Author's tabulations from the March 1997 CPS.

to offer insurance to anyone regardless of health status or to restrict variations in premiums based on an individual's health.

Each of these are difficult issues which pose challenging tradeoffs for health policy makers. This paper does not seek to definitively resolve these tradeoffs. Rather, we present a range of results for policies which vary along these dimensions to provide policy-makers with a basis for understanding the implications of the different routes to tax subsidization.

Finally, it is worth noting that there are a host of more detailed administrative issues involved in the establishment of tax subsidies. For example, how are tax-qualified health plans to be defined? What mechanisms will be available to minimize the problems - especially for low income individuals with minimal savings - of mismatch between insurance spending (which is year-round) and tax subsidies (which arrive only in April)? If the tax policy restricts coverage to those not offered employer-based coverage, how can employer-offering be measured and enforced? These important implementation questions are taken up in a companion paper prepared for the Kaiser Family Foundation by Meyer, Silow-Carroll and Wicks (1999).

II: Overview of the Simulation Model Created for The Analysis

In this section, we provide a very brief overview of the simulation model employed for this analysis. A more detailed description is provided in the Technical Appendix.

This model uses as its base micro-data on a nationally representative sample of individuals from the Current Population Surveys (CPS) for February and March, 1997. The former has information on employer insurance offering, while the latter has information on insurance coverage from all sources, income, firm characteristics, self-assessed health status and demographics. As well, in recent years, the March CPS has also provided a detailed calculation of taxable income and tax rates for each family in the sample. We supplement the CPS with data from KPMG-Peat Marwick, which provide information by region and firm size on employer premiums, employee premium shares, and whether employee premiums are made on a pre-tax basis, and data from the Community Tracking Survey and quotes from non-group insurers on the costs of non-group insurance policies.

We then use the data to simulate the impact of alternative tax policies on insurance coverage. This involves assessing how the policies affect individuals and employers in different circumstances -- based on such factors as their insurance status, income, and tax rate -- and how those individuals and employers respond. For each policy, the simulation model can estimate effects such as: the overall cost to the federal government, how many and what types of people become insured, and how many employers currently offering coverage drop it. In doing this type of analysis, a number of assumptions must be made about how individuals and employers will respond to tax subsidies, including:

- The extent to which the currently uninsured will purchase the newly subsidized insurance

coverage

- The extent to which those with non-group coverage will take up subsidies to their insurance spending
- The extent to which those with group coverage will switch to non-group coverage if it is subsidized
- The extent to which firms will react to the availability of subsidized non-group coverage by dropping their offering of insurance to their employees, or by cutting back on employer premium contributions to insurance
- The extent to which firms will react to the availability of subsidized employee premium contributions by reducing their premium contributions.
- The extent to which those employees dropped from group coverage will then take up subsidized non-group coverage
- The extent to which insured employees facing higher premium contributions will drop group coverage, and to which uninsured employees facing lower premium contributions through tax subsidization will takeup group coverage.
- The extent to which those on Medicaid will switch back to non-group coverage if it is made available on a subsidized basis

These assumptions -- which are detailed in the technical appendix -- are based on other published studies, where available, as well as consultations with economic, actuarial, and policy experts. The simulation model is capable of estimating how variations in the assumptions alter the results. A sample of these type of "sensitivity" analyses are discussed briefly below.

We consider below a variety of tax policy options. But it is very useful to start with a common "base case," from which the implications of changing policy parameters can be considered. Our base case for the analysis below is a tax credit for health insurance spending that is capped at $1,000 per year for single filers and $2,000 per year for joint/head of household filers. As we detail in the Appendix, this amounts to roughly 43% of the costs of a typical non-

group policy for an uninsured individual, and about 31% of the costs of a family policy for the typical uninsured family. The credit is refundable, and the full amount of the credit is available only to joint filers with taxable incomes of $75,000 or less, phasing out to zero credit at taxable incomes of $100,000; the limits are $45,000 and $60,000, respectively, for single filers. It is available only for non-employer provided insurance, so that it cannot be used towards the purchase of employer health insurance premiums; but it is available to all persons, even those offered employer-provided health insurance.

III: Tax Policy: Insurance Coverage and Cost Implications

Base Policy

The impacts of this base case policy on insurance coverage and costs is presented in Tables 1A and 1B. The first table shows the total cost of the policy; the takeup of the subsidy by various groups, categorized by their pre-subsidy insurance status; and the net change in the size of these groups from before to after the subsidy. We present all population estimates both in absolute millions of persons and as a percentage of the size of the group before the policy impact; all group sizes include only the non-elderly. We explore in particular, for the employer-insured, the avenues that lead to the net change in this group. The second table shows a distributional analysis of the impacts of the policy. We consider the division of the population into those below the federal poverty line ($17,274 for a family of four), those between 100% of the federal poverty line and 200% of that amount, those between 200 and 300%, those between 300 and 400%, and those over 400% of the federal poverty line; this last cutoff is about 33% more than the median family income of $50,000 for families of this size. For each group, we show: the net cost and the percent of costs attributable to the group; subsidy takeup in absolute and percentage (relative to group size before the policy impact) terms; the change in the uninsured in absolute and percentage terms; and the cost per newly insured person (total dollars spent on that group relative to the reduction in the uninsured).

Our key findings are:

- The total cost of this policy is $13.3 billion dollars per year (in 1999 dollars).
- Almost 18.4 million persons takeup the subsidy, which is 8.2% of the total non-elderly population.

- Of those taking up, 4.7 million were previously uninsured (11% of the uninsured), 8.6 million were previously covered by non-group insurance (57% of those covered by non-group insurance), 4.7 million were previously covered by employer-provided insurance (3.2% of those covered by employer-provided insurance), and 0.4 million were previously covered by Medicaid (1.8% of those covered by Medicaid).

- On net, the number of uninsured falls by slightly more than 4 million, which is 9.5% of the uninsured population.

- On net, the number of persons with non-group insurance rises by 9.8 million, which amounts to a rise of two-thirds in the size of this group.

- On net, the number of persons with employer-provided insurance falls by 5.4 million, which is 3.6% of the size of this group. This change is comprised of:

  - 1.1 million persons whose firms stop offering group insurance, so that they move to the non-group market;
  - 0.1 million persons whose firms stop offering and they become uninsured;
  - 3.6 million persons who switch from group to non-group insurance;
  - and 0.6 million persons who become uninsured because their firms are raising the employee share of insurance premiums and they decide to drop coverage.

While this policy lowers the number of uninsured, it also induces a substantial shift from group to non-group coverage. Moreover, almost one-half of those taking up the subsidy are persons who are currently already purchasing non-group insurance. As a result, the *net cost of the policy per newly insured person is almost $3300*, which is substantial. By comparison, on average in our sample, employer-provided insurance costs $1860 per person covered, and non-group insurance costs $2100. That is, due to imperfect targeting, the government is paying 50% more than the cost of the typical non-group policy per person newly insured.

It is interesting to note that most of the government cost of imperfect targeting of this subsidy arises primarily through takeup by the existing non-group insured, 57% of whom take advantage of this new subsidy, not through dropping and switching among the existing employer-

insured. This is because, while those on employer insurance who drop or switch, cost the government money through their takeup of the subsidy, they also save the government revenues by dropping their currently tax subsidized employer coverage. For example, for those workers whose firms drop their health insurance coverage, we assume that their wages will rise to reflect the fact that their employer is no long paying for health insurance, and can therefore afford higher wages. These higher wages will then be taxed, raising new revenues, and offsetting the cost of their takeup of the new insurance subsidy. For those who switch from group to non-group insurance, we assume that the cost savings to the employer is passed back to workers on average in the form of higher wages (although not specifically to the switching employees), once again raising revenues. And revenues also rise since employers react to this policy, to some extent, by lowering their pre-tax contributions for health insurance, and once again raise wages to compensate for this.[7]

[7]As we discuss in the Appendix, how this is modeled depends critically on one's assumptions about the *incidence* of reductions in employer spending on health insurance. The key issue is that money saved by employers through reduced group insurance spending must go somewhere, and as a result will eventually be taxed. We assume that the savings accrue to wages, either in a worker-specific way (for firm dropping) or on average across all workers (for switching from group to non-group insurance). If we assumed instead that some of these savings accrued to profits, the revenue offset would be similar, as the corporate tax rate is similar to the

Distributional Analysis

Given the strong correlation between insurance status and income, it is important to consider not just the aggregate impacts of this subsidy, but its distributional implications as well. This is done in Table 1B, using the income groupings relative to the poverty line described above. There are several findings of note from this distributional analysis:

- The lowest income group, which contains 45% of the uninsured, receives about 26% of the net spending on this policy. Only about 1.3 million of the uninsured in this group gain coverage (6.6% of the uninsured below the poverty line); this is about one-third of the total number of uninsured who gain coverage across all income groups. Overall, this policy is more efficient for this subgroup than for the full population, with a cost of $2,740 per newly insured. This is primarily because there are few non-group insured taking up the policy in this income range, relative to the number of uninsured taking it up.

- Those between 100 and 200% of poverty, a group that contains another 30% of the uninsured, receive about 30% of the net spending from this policy, and there is a decline in the uninsured of about 1.6 million. Spending is even more efficient in this group than for the lowest income group, with a cost of $2,500 per person newly insured, since there is an even higher ratio of uninsured to non-group insured in this income range.

- Those between 200 and 300% of poverty receive almost 20% of the net spending from the policy, but there is a decline in the uninsured of only 0.7 million. As a result, spending is less efficient for this group, with a cost per newly insured of over $3,500.

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average individual's income tax plus payroll tax rates. The incidence of the savings will affect the ultimate distributional consequences of tax policy, but that issue is not addressed in the model.

Those above 300% of poverty receive 24% of the net spending of this policy, but there is only a very small change in the number of uninsured, in large part because there are so few uninsured in this income group. As a result, spending is much less efficient at these higher income levels. For those between 300 and 400% of poverty, there is a cost of over $6,000 per newly insured. For those above 400%, there is a cost of almost $11,000 per newly insured.

Thus, a majority of spending under this policy (56%) is targeted to those below 200% of the poverty line, and three-quarters is targeted to those below 300% of the poverty line. But the spending that is done on those above 300% of the poverty line is very inefficient, with a total of $3.3 billion spent on this group for a reduction in the number of uninsured of only 400,000. Overall, while this policy has a high cost per person newly covered, it is providing a large tax break that is mostly targeted to those below 300% of the poverty line; these distributional gains should be weighed against any inefficiencies of this policy relative to alternatives.

Alternative Policies

While the base policy considered mimics the structure of a number of proposed tax subsidies, there are at the same time a host of alternative structures that have been proposed in current congressional debates. While we cannot do justice in this limited space to the full variety of alternatives available to policymakers, we consider several natural alternative policies here to provide a flavor of how the effects of tax policy change as the basic structure of the program is altered.

Making the Credit Non-Refundable: One option that will lower costs substantially, and aid with ease of administration of the subsidy as well, is to make it non-refundable. On the other hand,

this will severely limit the benefits of this subsidy for the uninsured, more than 60% of whom have tax liabilities less than $1,000 (so that they can only partially benefit from a non-refundable credit).

The impacts of a non-refundable $1,000/$2,000 credit are presented in Tables 2A and 2B. This does indeed lower the costs of the subsidy, which fall to almost half of the costs of the non-refundable credit ($7 billion). But the impact on the size of the uninsured population falls even more, with fewer than two million uninsured gaining coverage (or only 4.3% of the uninsured). As a result, the cost per newly insured person is even higher than with the refundable credit, at over $3,800 per person. This high cost is a function of the fact that such a high share of the dollars are going to the previously non-group or employer-insured.

Moreover, the distributional consequences of this approach are much less attractive. As Table 2B shows, only about 2% of the spending through this policy goes to those below the poverty line, and almost 50% goes to those above 300% of the poverty line. Once again, for those higher income groups at the bottom of this Table, the spending is quite inefficient; for those above 400% of the poverty line, the cost per newly insured is almost $11,000.

These results are important ones to highlight in the context of current debates over tax policy, which are often focused around issues of refundability. There are a number of political and administrative arguments against refundability, most significantly the question of whether net tax refunds to low income families are hidden forms of "welfare" payments. But the economics in most cases speaks clearly: refundability is critical for appropriate targeting of tax incentives to low income populations. As we show below, this is particularly true for large

credits, because taxpayers with low tax liabilities will be less likely to have sufficient tax payments against which the credit can be offset.[8]

Using a Deduction: Another alternative that can limit costs further is to use a deduction rather than a credit structure. This has similar problems as non-refundability in terms of reaching the uninsured. Moreover, of the half of the uninsured that do pay taxes, 90% are in the 15% tax bracket, so a subsidy in the form of a deduction is worth relatively little to them. On the other hand, by so substantially limiting the value of the subsidy, it also potentially raises efficiency by limiting takeup by the currently employer-insured.

The results of an unlimited deduction of non-group health insurance costs are presented in Tables 3A and 3B; we assume that this is an "above the line" deduction that is available to all taxpayers and not just those who itemize. The costs of this policy are dramatically lower than for the alternatives presented earlier, at only $870 million per year. But the impact on insurance coverage is also much more modest, with only 250,000 uninsured gaining coverage. This is

[8]For example, consider a person with a $501 tax liability, and contrast a $500 and $1000 credit. In the former case, refundability is irrelevant for the value of the credit to this individual, since they can take the full credit against their taxes, but in the latter case they can't take the full credit unless it is refundable.

because there is only modest overall takeup of this subsidy by the uninsured to begin with (600,000 persons), and much of this is then offset by firm dropping and reduced coverage due to firm contribution reductions. Obviously, estimating with precision the change in the number of uninsured in the range around zero is difficult. But it is clear that deductibility will have both "low bang and low bucks:" the costs will be low but the impacts on insurance coverage will be essentially nonexistent.

Note that the cost that does arise from this policy is not due to takeup by the previously employer-insured; the government actually makes money on this population, with the government revenue from higher wages due to firm dropping and contribution reductions outweighing the government cost of subsidy takeup. Rather, the inefficiency arises primarily from the fact that *three-quarters of those taking up this subsidy were already non-group insured.* Since a deduction is not particularly attractive for the low income uninsured population, this leads to a very low efficiency of this type of policy.

This point is also reflected in the distributional analysis of Table 3B. Only 6% of the benefits of this policy flow to those below the poverty line, and over 42% flow to those over 300% of the poverty line. Moreover, there are actually *increases* in uninsurance in the group over 400% of the poverty line, as firm dropping and individual dropping due to decreased contributions lead to more uninsured than takeup the subsidy in these income ranges.

Limit the Credit to Those Not Offered Employer Coverage: One alternative to try to better target the spending on this subsidy is to limit the credit only to those currently not eligible for employer

insurance coverage. There are of course difficult administrative issues associated with implementing and enforcing such a policy, as discussed in Meyer, Silow-Carroll and Wicks (1999). But the advantage is that being offered insurance coverage by one's employer is tightly related to being covered by insurance, so that this policy provides a device through which to better target subsidy dollars to the currently uninsured.

We consider the impact of a refundable $1,000/$2,000 credit that is limited to those not offered employer insurance in Tables 4A and 4B. The total cost of this option is much lower than the base policy, at only $6.2 billion per year, although the number of persons newly insured falls as well, to 2.1 million. The efficiency of this alternative is somewhat better than the base case, at $2,927 per newly insured person. This reflects two effects, relative to the base case. On the one hand, there is savings from much lower takeup of this policy by the existing non-group insured, since many of them are offered employer-provided insurance. On the other hand, there is a much larger increase in the uninsured pool from firm dropping (there is no switching here, since offered individuals can't take the subsidy); we estimate that 3.2 million persons are dropped by their firms, and 700,000 of them remain uninsured.

As Table 4B illustrates, this alternative is also somewhat more distributionally attractive than the base policy. Over one-third of the dollars are targeted to those below the poverty line, and only about 13% of the dollars are spent on the very poorly targeted groups above 300% of the poverty line, where the number of uninsured is actually rising.

Thus, if this type of restriction can be enforced, a policy which targets its subsidy to those who are not offered employer-provided insurance can deliver both somewhat higher efficiency

and somewhat better distributional consequences. These modest gains, however, must be traded off against the costs of enforcing this administratively awkward restriction. Moreover, it seems unlikely that this provision can be perfectly enforced; some persons who are offered insurance, either through misunderstanding or intent, will apply for this subsidy.

Expand the Subsidy to Apply to All Insurance Spending: An alternative direction in which to take policy is to expand from the base case subsidization of just non-group premiums to subsidization of all spending on insurance, even the employee portion of employer premiums. On the one hand, this would greatly increase costs, as over 70% of the employer-insured pay some or all of their premiums, and all of these costs would now be paid by the government. On the other hand, the Current Population Survey reports that almost 40% of the uninsured are offered group health insurance, and a large subsidy would essentially make insurance free for this population, with dramatic impacts. Moreover, there would be neither firm dropping nor employee switching to non-group insurance under a policy such as this. Of course, this policy raises a new set of difficult administrative issues as well, around the measurement of the employee share of employer premiums.

The net results of this policy are presented in Tables 5A and 5B. The cost of the policy is indeed substantial, at $62.2 billion per year. On the other hand, the impact on the uninsured is dramatic, with 12.4 million uninsured gaining insurance coverage. Overall, however, this is the least efficient of the policies considered, with a cost of over $5,000 per newly insured person.

This policy has a very broad reach, with over 127 million persons taking it up. This

group is of course predominantly comprised of the employer-insured, who takeup the insurance subsidy to cover their premium costs. Even the almost 30% of the employer-insured whose employers now pay all of their premiums will take up this policy, as we assume that most employers will to some extent charge their employees premiums if such a generous tax credit is in place. In addition, a major difference between this and earlier policy options is that the number of employer-insured is rising, not falling. Thus, to the extent that policy-makers value maintaining the employer-insurance market, one benefit of this policy that is not monetized in our "efficiency" measure is the fact that this policy, unlike the others considered, does not induce a large move out of the employer-based pool. This issue is discussed further in the conclusion.

This policy alternative is less distributionally attractive than a refundable credit, but spends a higher share of its dollars at the bottom of the income distribution than does the non-refundable credit or deduction. Only 36% of the spending is on those below 200% of the poverty line, and over 40% of the spending is on those above 300% of the poverty line. To put this result in perspective, this policy would involve spending twenty percent more on those above 400% of the poverty line, to cover fewer than one million uninsured, than the base policy would spend overall to cover four million uninsured.

It is worth noting, however, that the inefficiency of this policy comes more from its scale than from its structure. As we will show in the next section, the cost per newly insured from this approach is not appreciably higher than that from the base policy that is extended in generosity to provide comparable levels of coverage to the uninsured.

Change the Scale of the Subsidy: While we have chosen a credit of $1,000 for singles and $2,000 for marrieds as our base case policy, one could consider much less or more generous alternatives as well. In Tables 6A/B and 7A/B, we consider first halving, then doubling, the generosity of this policy. We find that while the larger credits substantially increase the number of uninsured covered, they do so much less efficiently. At a credit of $500 for singles and $1,000 for marrieds, we estimate costs that are only 30% those of the base case, but a reduction in the uninsured that is almost one-half as large. As a result, the spending per newly insured person is only $2,240, which is substantially below even average group costs per person. On the other hand, at a credit of $2,000 for singles and $4,000 for families, which would approximate the full cost of insurance for these populations, we estimate that costs rise three-fold, but the number of newly insured less than doubles, so that the spending per newly insured rises to $4,915 per person. At the same time, the small credit covers fewer than 2 million new persons, while the larger credit covers over 7.7 million.

The smaller subsidy also targets its spending more directly at the bottom of the income distribution, with over 60% of the dollars flowing to those below 200% of poverty. On the other hand, the $2,000/$4,000 credit spends less than half its dollars on those below 200% of poverty, and over 30% on those above 300% of poverty. This worsening of distributional impacts as generosity rises reflects the dramatic increase in takeup by both the (relatively high income) non-group insured and employer-insured; for example, the number of employer-insured who takeup the subsidy rises from 5 million in the base case to 13 million for the $2,000/$4,000 credit. On the other hand, there is a much more dramatic impact of the larger subsidy on the lower income

uninsured groups; only 3% of the uninsured below poverty and 5% between 100 and 200% of poverty gain coverage with the smaller credit, while 11% of those below poverty and 26% of those between 100 and 200% of poverty gain coverage with the larger credit.

Thus, there is a clear tradeoff as the generosity of the tax credit is changed. Modest credits on the order of $500 for singles and $1,000 for marrieds cannot deliver a very large change in the uninsured population, but the newly insured that are covered tend to be the lowest income and are low cost. Very large credits on the order of $2,000 for singles and $4,000 for marrieds can induce substantial changes in the uninsured population, but only at a very steep cost per newly insured.

Other Changes to Generosity: Alternative means of changing the generosity of the tax subsidy are to make only a portion of insurance costs eligible for the tax subsidy, or to change the range of eligible incomes. We consider the impact of such changes in Table 8, which summarizes the key elements from earlier tables: the total takeup of the subsidy; the total cost; the change in the uninsured, non-group insured, and employer-insured; the cost per newly insured; and the percentage of benefits that flow to those with incomes below 200% of the poverty line.

We first consider the case where families are allowed to receive a subsidy for only 50% of their costs, although they can continue to count these costs until the total credit equals the base case amount of $1,000/$2,000 (that is, they can take this credit against insurance costs of up to $2,000 if single and $4,000 if married). This reduces the cost of the subsidy by roughly half, to $7 billion, but it reduces the impact on the uninsured as well, with only 2.8 million gaining

coverage. The efficiency of this policy is significantly higher than the base case, with a cost per newly insured of only $2,500. This finding continues to support the conclusion from earlier Tables 6 and 7 that as the subsidy becomes more generous, it becomes less efficient.

We next consider the impact of further limiting the income ranges for eligibility for the subsidy.[9] We reduce the phase out range for families from a range of $75,000-$100,000 to a range of $30,000-$50,000, and likewise scale back the limits for singles. Interestingly, this change saves over $2 billion per year in costs, with only a very small change in the number of persons newly covered. As a result, the efficiency of the policy improves substantially, with a cost of $2,938 per person newly insured. Moreover, this policy is much more distributionally attractive than the base case, with 69% of the benefits flowing to those with incomes below 200% of the poverty line. This suggests that there are strong net gains from income limiting the availability of this subsidy to middle income families.

Easing Liquidity Constraints: A key issue in implementing tax credits is the mismatch between the flow of tax subsidies and the flow of insurance premium payments. Low income households who would like to take advantage of tax credits during a given year, but who only receive their credit the next Spring, may face liquidity problems that leave them unable to take advantage of

[9]We also considered a case where the income limits were removed, but this case delivered very similar results to the base case.

this tax subsidy. If the government can find a solution to this timing mismatch, it can increase the propensity of the uninsured, as well as those dropped by firms and those on Medicaid, to takeup tax subsidies. A variety of analysts have proposed solutions to this problem, such as paying tax credits directly to insurers (Etheredge, 1999). But our track record with the Earned Income Tax Credit (EITC) suggests caution in assuming that this problem is easily overcome: while individuals can claim their EITC throughout the year, and presumably for many individuals it would be of some value to do so, over 99% of claimants receive the credit as a lump sum the next Spring (Leibman, 1998). It is worth noting that even such a timing match would not remove the uncertainty over eligibility for the subsidy, which is not resolved until the end of the year and may limit takeup. With the high income limits that we consider (up to $100,000 for married couples) this is unlikely to be a major concern, but as income limits are tightened this uncertainty becomes more important.

While we have assumed that liquidity constraints reduce takeup in our base case calculations, it is important to assess the impact of easing them by assuming that the government solves the liquidity problem, and the results of doing so are shown in the next rows of Table 8. Easing liquidity constraints increases by $1.3 billion the cost of the policy (absent any additional interest or other costs to the government of easing these constraints), and results in an additional 1.4 million newly insured persons, for a total of 5.5 million newly insured. This implies a substantial increase in the efficiency of the policy, with a cost of only $2,700 per newly insured. The distributional impacts of this assumption change are modest.

Moreover, for larger tax credits, the impacts of easing liquidity constraints are much

larger. Our estimates for a $2,000/$4,000 credit without liquidity effects are shown in the next row. Here, easing liquidity constraints raises costs by $6 billion, but raises the number of uninsured covered by more than two-thirds to over 12 million. In a world without liquidity constraints, therefore, very large tax credits look much more efficient, at a cost of $3,665 per newly insured. This much larger effect reflects the fact that liquidity constraints are a larger problem for larger subsidies. Moreover, while liquidity constraints are a barrier to takeup by the uninsured, they are not a barrier to takeup by the non-group insured, since this population is already making monthly insurance payments so that even a standard April tax credit payment is very valuable to them. Thus, for large credits in particular, easing liquidity constraints is a particularly useful means of increasing policy efficiency, because it is directly targeted towards those uninsured who are hampered from taking up the tax subsidy.

Sensitivity

We have also considered the sensitivity of our findings to the assumptions employed in the analysis. We consider in particular three changes. The first is to assume that the price of non-group policies falls by 10% as this tax subsidy is implemented. In practice, a reduction in the price of non-group policies could arise in one of two ways. First, since this policy induces a rise in the non-group market of over two-thirds, there may be reductions in the premium that is charged in this market due to increased administrative efficiency and reduced adverse selection. Second, this policy change may be accompanied by other regulatory actions that limit pricing markups in the non-group market.

A reduction in the price of non-group insurance raises both the costs and benefits of tax subsidies; the costs go up because the lower prices are offset by increased takeup, and the benefits rise as more uninsured takeup the policy. The number of newly insured rises to almost 5 billion, and the efficiency of the policy rises somewhat as well, with a cost per newly insured of under $3,000. There are no significant distributional impacts of this change.

The second change is to lower the rate at which the employer-insured are willing to switch from their group policies to non-group policies.[10] This induces no change in the insurance coverage impacts of the policy, but it does lower costs slightly. More generally, we have found that the results discussed here are fairly robust to any changes in assumptions about the behavior of firms or workers, since this has little impact on the uninsured population and since there are low net costs of the employer-insured taking up this subsidy (due to offsetting tax revenue increases as discussed earlier).

The third change is to lower our assumed price elasticity, which impacts primarily on the takeup of the non-group subsidy by the uninsured.[11] The effects of doing this are very dramatic: costs fall by only $1.7 billion per year, but the number of newly insured falls by 1.5 million, so that the efficiency of the policy deteriorates significantly. While we have based our estimate of price elasticity on a careful reading of the literature, this sensitivity does suggest the value of further research investigating this key behavioral parameter.

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[10]We change the constant in our switching formula from 0.625 to 0.4; see appendix for details on how this formula works.

[11]We change the constant in our price elasticity formula from 0.625 to 0.4; see appendix for details on how this formula works.

IV: Conclusions

Federal policymakers continue to look to tax policy as a politically attractive vehicle for addressing the problems of the uninsured in the U.S. As a result, it is critical to carefully assess the cost, insurance coverage, and equity implications of alternative approaches to tax subsidization. While point estimates of the effects of any major change in health financing cannot be estimated with perfect precision, simulation analyses using common assumptions are particularly useful for comparing and contrasting the effects of alternative proposals. Our approach in analyzing alternative tax-based mechanisms for covering the uninsured in this way is similar to a recent series of analyses carried out by a Kaiser Family Foundation project on Incremental Health Reform (1999).

We have compared alternative tax policy designs using a consistent set of measures, including: the overall cost to the federal government, the number of uninsured who gain coverage, the federal cost per person newly insured (which is a measure of how efficiently federal dollars are being used), and the proportion of benefits that flow to those below 200% of the poverty level (which is a measure of the degree to which the policy targets those with low incomes).

There are several clear conclusions from this analysis. First, it is difficult to design a tax policy which delivers a modest cost per newly uninsured person, while insuring a large number of new persons. The base policy considered here -- a refundable credit of $1,000 for singles and $2,000 for families -- is more generous than many of the proposals being considered by federal policymakers, and yet still subsidizes less than half of the estimated cost of a non-group

insurance for a typical person. While it would decrease the ranks of the uninsured by an estimated 4 million persons (less than 10% of the uninsured population), the average cost per person newly insured is $3,300. Raising the value of the credit or allowing tax subsidies to be used towards the purchase of employer-sponsored coverage would insure more people, but also raise the cost per person newly insured significantly. Lowering the value of the credit would be more efficient – meaning that the cost per person insured would be lower – but the result would be an even smaller dent in the number of Americans uninsured.

Second, there are clearly more and less efficient ways to cover a given number of uninsured. We find in particular that non-refundable credits are much more expensive per uninsured person covered, while covering fewer of the uninsured. We find as well that income limits on eligibility that more tightly target the policy towards the lower part of the income distribution in which the uninsured are concentrated can significantly lower costs with essentially no impact on the number of persons newly insured. Finally, we find that policies that can more tightly match the timing of tax subsidies with the timing of insurance payments can improve both the scope and efficiency of tax policy, especially for low-income people.

Third, different approaches to tax subsidies vary not only in the efficiency with which they reach the uninsured, but also in how effective they are at targeting resources to those with low incomes. For example, a policy that targeted refundable credits of $1,000 for singles and $2,000 for families towards people with incomes of less than $50,000 would provide 69% of its benefits to those below 200% of the poverty level. In contrast, a policy that allowed people to deduct non-group insurance premiums would provide just 30% of its benefits to people below

twice the poverty line, and a credit that was not refundable would target an even smaller portion of aid to the poor or near poor.

Finally, tax-based subsidies – particularly those whose subsidies are most expansive – would likely lead to reductions in the number of people with employer-based coverage. For example, we estimate that the base case – a refundable credit of $1,000 for singles and $2,000 for families – would reduce the number of people with employer coverage by 5.4 million. Most of these people (3.7 million) would switch from employer coverage to non-group insurance because they would find the new tax subsidies more attractive than their current situations. However, the remainder would either be dropped by their firms – and then either purchase non-group insurance or go without coverage – or become uninsured because their employers increased the amount they must pay for insurance. Policies that mitigate firm dropping of coverage or switching to non-group insurance by employees (e.g., by allowing the credit to be used towards the purchase of employer coverage) tend to cost more in total and also per person newly covered.

This paper does not discuss in detail a number of important additional issues to be considered with tax subsidies. Four in particular stand out. The first, mentioned briefly earlier and discussed in more detail in Meyer, Silow-Carroll and Wicks (1999), is administrative complexity. This is particularly relevant given the importance of surmounting liquidity constraints in improving the efficiency of tax policy. Another difficult administrative issue is geographic adjustment of credit levels. There is substantial regional variation in the cost of insurance, and even very large variation within states; for example, in the data we use on employer premium averages across even large regions of the U.S., there is a 50% difference

between the lowest and highest premium regions. We have assumed that this is not reflected in credits that are provided, but policy-makers may choose to target the credit to local cost levels. This is an advantage of an uncapped deduction, which more naturally respects local cost variation (although only in a limited way due to the small resulting subsidy rates).

The second is the erosion of the base of employer-provided health insurance. The past decade has seen a steep decline in employer-provided insurance coverage, and tax subsidies to non-group coverage would only exacerbate this decline. If there are pooling advantages to having individuals obtain their insurance through the workplace, then this is a potential concern with policies targeted only to non-group coverage. Moreover, those leaving the employer pool will be the healthiest employees, leading to a rise in costs per covered person among those remaining in the pool. On the other hand, however, doubling the size of the non-group market (as we estimate would occur in the base policy) could substantially improve the functioning of this market, both in terms of administrative efficiency and reduced adverse selection. And de-linking insurance from the workplace could improve the functioning of the labor market by reducing insurance-induced immobility across jobs, or "job lock" (Gruber, 1999).

Third, this paper has focused almost exclusively on gains in insurance coverage, but it has not differentiated the kinds of insurance that individuals are holding. If tax policy leads, either through switching or employer dropping, to fewer individuals covered by very generous employer policies and more covered by substantially less generous non-group policies, then there are implications for quality of health care that become potentially relevant. Whether the differences in quality of plan are actually relevant for health is in fact disputable. But the impact

on quality of coverage remains an important concern for tax policy.

Fourth, we have not considered in any detail either pricing reactions in the non-group market nor state and/or federal regulatory reactions to this type of policy. It is possible, as noted earlier, that the substantial increase in enrollment in the non-group market could lead to reductions in prices. Moreover, non-group insurance plans might design policies targeted specifically to the available level of the credit, further increasing takeup from what is modeled here (although this takeup might be in plans with significantly less generous benefits than are typical today).

At the same time, this analysis assumes that policies in the individual market are universally available (at health risk adjusted prices). While such "guaranteed issue" in the individual market is required in some states, most states allow insurers to exclude people who are in poor health, which could reduce takeup. It is possible that state and/or federal regulators could accompany tax subsidies with individual market regulations to limit such practices, but these regulations are controversial. And, the net impact of insurance market reforms in the context of tax subsidies is uncertain, as it would raise costs for the most healthy and lower them for the least healthy. It is also possible that regulators could accompany subsidies with requirements on product quality in the non-group market, making it harder for individuals to buy the (relative to employer-provided insurance) lower quality product that is available in the non-group market, mitigating the impact of tax policy on insurance takeup.

In summary, tax policy does hold some promise as a means of providing health insurance to some of the uninsured. But providing coverage to substantial numbers will require very large

expenditures, both overall and per person newly covered. Even the most effective policy considered here, a $2,000/$4,000 credit that is accompanied by a solution to liquidity problems, costs almost $40 billion per year and covers only 30% of the uninsured. Thus, tax policy can likely be most useful as one part of an overall strategy to address uninsurance in the U.S., as opposed to a solution in and of itself.

Technical Appendix

This appendix describes in substantial detail the structure of the simulation model that underlies the simulation estimates presented in the main body of this report. Further details are available upon request.

Data and Baseline Assumptions

The base data set for the analysis is a match of the February and March 1997 Current Population Surveys (CPS). The March CPS provides a rich variety of information on insurance coverage from all sources, income, firm characteristics, self-assessed health status and demographics. As well, in recent years, the March CPS has also provided a detailed calculation of taxable income and tax rates for each family in the sample. The tax information in the March 1997 CPS is obviously not updated to reflect important changes to our tax system put in place in the Balanced Budget Act of 1997, most notably an income-limited tax credit of $500 per child and a reduction in the tax rate on long term capital gains. We have updated the CPS tax information to reflect these tax law changes. The February CPS is a supplement that has information on insurance offering by the firms in which the CPS respondents are employed.

Onto this base data set we have matched information from the 1998 employer survey done by KPMG-Peat Marwick. This survey provides for a national sample of employers information on health insurance premiums, employee shares of premiums, and the tax deductibility of employee premiums.[12] From these data we computed premiums, employee shares, and pre-tax status for different firm sizes in various areas of the country. We noted the interesting feature in the data that total premium costs actually rose with firm size, despite the well-documented phenomenon that insurance loading factors are higher for smaller firms (Congressional Research Service, 1988). This is likely because the plans offered by larger firms are more generous than the plans offered by their smaller counterparts, and it would be inappropriate to call this higher quality a purely higher cost of insurance. As a result, to calculate total premium costs, we used the overall average costs for each of 27 areas in the country, and then applied firm-specific loading factors calculated by Actuarial Research Corporation (ARC) to update the 1988 CRS estimates. For the split between employer and employee premium costs, and the percentage of employees who make pre-tax contributions, we use data for six firm sizes in 4 regions of the country.

We then matched this information to our CPS data base. We did so using three variables in the CPS: firm size, location, and an indicator for whether your employer paid all of your health insurance costs. The latter allowed us to more precisely match employee shares of costs to the CPS. For some individuals in the CPS, we are also missing information on whether they are

[12]In particular, we use information on the availability of a "flexible spending account", through which employees can set aside money on a pre-tax basis to cover all health spending, including insurance premiums. This provides a reasonable proxy for the availability of pre-tax contributions.

offered insurance, either because the data are missing in the February survey or because we are unable to match the observations across the February and March surveys. In this case, we impute insurance offering using data on firm size, location, and insurance coverage status from the February survey. We should note that eligibility will be taken to mean any eligibility for insurance, as opposed to eligibility for insurance where the employer pays some minimal share (e.g. 50%). It would be very difficult to implement this rule in our analysis, not to mention to enforce it legislatively.

To measure non-group market costs, we use a national average non-group premium for a single 40 year old male in excellent health of $120 per month, and adjust it for locational cost variation, age, and health status. Our figure for the average non-group premium is the average that is computed from data on actual premiums paid in the Community Tracking Survey data set;[13] it is also fairly representative of the non-group premiums reported in Chollet (1999) and of non-group premium data that was provided to us by both Mutual of Omaha and Trustmark. Due to both selection in who is covered by non-group insurance in the CTS, and the underwriting practices underlying the non-group quotes we obtained, we assume that this is the cost for an individual in excellent health, so that it will be higher as health status is worse. We use the KPMG data described above to provide locational variation in costs across 27 areas of the country. We obtained information from Mutual of Omaha on the age distribution of insurance premiums for their non-group policies, and from Actuarial Research Corporation (ARC) on the

[13]We are grateful to Bradley Herring for doing the CTS tabulations for us.

(netted out from age) distribution of medical costs by self-assessed health status.[14]

We also must model the insurance market environment in which the individual is operating. Using data from the Georgetown Public Policy Institute, we measured in each state in 1997 the presence of limitations on insurance pricing by age and health status. Of course, the difficulty in modeling these regulations is that it is unclear how they impact pricing in the insurance market. We assume that they simply compress the insurance cost distribution; so, for example, an age-rating band operates to set a ceiling and a floor on age-induced variation in premiums (and full community rating simply sets premiums to the average over all age and health classes).

Our resulting group premium estimate averages $2,214 for individuals with group coverage, and $5,566 for families. Our non-group premium averages, over all persons, $2,542 for individuals and $6,740 for families. For the (typically somewhat younger/healthier) uninsured, the average cost for individuals of non-group policies is $2,351, and the average cost for families is $5,826. For those holding non-group policies, the average cost for individuals is $2,993, and the average cost for families is $6,351.

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[14]Our health factors are 1 for excellent health, 1.21 for very good health, 1.84 for good health, 3.47 for fair health, and 5.8 for poor health. Our age factors range from a low of 0.456 for children to a high of 2.8 for men aged 62-64.

We assume that there are no changes in insurance regulation in response to this tax policy. We do consider cases where the loading factor on individual insurance is reduced, which could capture either a response of the non-group market to increased demand, or regulatory pressures. We also assume that there is no change in state or federal public insurance policy in response to tax subsidies. And we assume that there is guaranteed access; any one who is technically assigned by our model to demand insurance is assumed to be able to purchase it at the non-group price they face (which, as noted above, is a function of area group costs, age, and health status).

Finally, we do not have data on the composition of any given worker's firm in the CPS data. As a result, we proceed by assuming that each worker is fully representative of others in their firm. This approach does miss the richness that arises from within-firm heterogeneity in worker characteristics (although the direction of the effect of this heterogeneity on the results is unclear). Unfortunately, a lack of data on both workers themselves, their firms, and other workers in their firms precludes accounting for this heterogeneity in the analysis.

Incidence

A critical question for the analysis is whether the cost of health insurance is reflected in employee's wages. This is a long-standing question that has been the subject of considerable academic research; see Gruber (1999) for a review. The general conclusion from both theory and empirical evidence is that there is "full incidence" of employer insurance costs; that, over the medium to long run at least, health insurance costs are reflected in employees' wages. But an

unresolved issue in this literature is how finely this shifting to wages occurs. For example, are less healthy workers paid lower wages than more healthy workers because their insurance costs are higher?

In our base case, we make a mixed set of assumptions on incidence. For most purposes, we assume "average incidence": the employee's wages reflect the average cost of insurance to the firm. Therefore, for example, if the firm drops health insurance, then when the employee considers whether to purchase a non-group policy he contrasts the full cost of his previous group coverage (both employee and employer portions) to the subsidized non-group costs. In addition, his wages are rising by the employer cost of health insurance, so he will pay additional taxes on that income, generating government revenue. Likewise in this base case, if the firm reduces its premium contributions, raising the employee's contributions, then it also provides an offsetting wage increase.

However, we felt that this assumption was inappropriate for thinking about individuals switching from group to non-group policies. It is unlikely, at least in the short run, that firms will selectively raise the wages of those employees who choose to drop their existing firm policies. This has two implications. First, when an employee considers switching, he contrasts only his current own premium costs (and not the employer share of costs) to the subsidized costs of the non-group policy. Second, if an employee moves from employer-provided to non-group coverage, the money saved by the firm is not passed back to that worker in the form of higher wages; we assume that the money is instead spread across all workers, and calculate revenues by assuming an average marginal rate of 15% (plus a payroll tax rate of 15.3%).

We recognize that there is some controversy over the extent to which wage shifting operates in reality. But the key point to note is that the money saved by employers through reduced group insurance spending must go somewhere, and as a result will eventually be taxed. We assume that the savings accrue to wages, either in a worker-specific way (for firm dropping) or on average across all workers (for switching from group to non-group insurance). If we assumed instead that some of these savings accrued to profits, the revenue offset would be similar, as the corporate tax rate is similar to the average individual's income tax plus payroll tax rates.

Calculating Subsidy Rates

Armed with information on family tax rates and insurance costs, we can calculate subsidy rates, which are the central determinant of the behavioral responses that we will discuss below. For deductions, the subsidy rate is simply the individual's tax rate, so long as they are fully income eligible; if their income is in the phase out range, then their subsidy rate is reduced accordingly. For credits, the subsidy rate is 100% if the individual is income eligible and their imputed non-group premium is below the credit cap. If the premium is above the credit cap, then the subsidy rate is determined by the share of the credit that is under the cap. If a credit is not refundable, or if individuals hit the upper income limit, then this further limits the share of the credit that individuals can take advantage of and thereby the subsidy rate.

One important issue that arises in computing subsidy rates is the presence of families with mixed insurance coverage, e.g. some persons on non-group or group coverage and some

uninsured. In these cases, we assume that the priorities for credit dollars are first to cover the uninsured members of the family, second to subsidize existing non-group premiums, third to finance switching from group insurance, and fourth to finance switching from Medicaid. That is, for a family where the parents are group insured and the children are uninsured, they will first consider using the credit to insure the children, and only after that decision has been made will they consider whether any remaining credit dollars should be used to finance a switch to non-group coverage. We therefore recompute subsidy rates for different family members depending on their priorities; since the uninsured children in this family would use up much of a credit if they take up insurance, that leaves a lower remaining family credit (and therefore a lower subsidy rate) for the group insured switching decision.

It is worth noting in this context that, for families with a common insurance coverage status, we do not model person-by-person coverage changes, but rather assume that the family moves together. That is, if a family is all uninsured, we consider only whether they will take the credit to move the entire family onto non-group policies, not whether they might move a particular member into coverage. This may lead us to understate the coverage increase among the uninsured, but at the same time it may also lead us to understate movements out of group coverage and takeup by those on non-group coverage.

Another complication that arises in the CPS is that a large number of persons (predominantly dependents) with non-group insurance coverage derive that coverage from outside of the household. As a result, it is impossible to know with precision the characteristics of the tax unit which is receiving a subsidy, and therefore difficult to compute the subsidy rate.

This group is sufficiently large (5 million persons, as estimated by the CPS) that we did not want to simply ignore them. We therefore assumed that the characteristics of the tax filing unit from which they derived their coverage were identical to the characteristics of the tax filing unit in which they reside. This should be fairly accurate on average and allows us to incorporate this sizeable group into the analysis.

A final complication is that we have a number of persons in the data set with more than one source of insurance coverage, particularly those with non-group coverage as well as either group or public coverage. This could arise because individuals simultaneously have two sources of coverage (e.g. supplementary non-group coverage that fills gaps in either group or public coverage), or because individuals had both types of coverage over the previous year, and the CPS question asks about coverage at any point in the previous year. For the purposes of computing subsidy rates and behavioral responses, we treat individuals reporting both group and non-group coverage as having group coverage, and individuals reporting both non-group and public coverage as having non-group coverage.

Behavioral Elasticities

As noted in the text, we employ a host of behavioral elasticities in our simulations. Our particular assumptions are:

Takeup of tax subsidy among those already purchasing non-group insurance: Following on the substantial evidence from a variety of tax subsidies that takeup is less than full, we assume that there is only partial takeup by the existing non-group insured. In particular, we assume that takeup varies from 50% at the smallest subsidy level to 90% at a 100% subsidy; the latter figure recognizes that many large tax subsidies, such as the EITC, are not fully claimed by those

eligible.[15]

Takeup of subsidized non-group insurance among the uninsured: We calculate takeup by applying both a price elasticity and a correction for the burden of premiums relative to income. For our base price elasticity, we use -0.625. We then augment this with a correction factor of the form: (1- (non-group premium/income))^2. This term accounts for two factors which are likely to lead to takeup that falls with income. The first being the fact 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). The second is liquidity constraints: we assume that the government will not find a way to solve the problem that insurance expenditures are made throughout the year, but any credits or deductions are only received the next April. This is a much larger problem for lower income individuals who have both little savings and potentially poor access to credit markets. The quadratic form of the expression captures the fact that both of these effects are likely to operate very strongly towards the bottom of the income distribution. This factor generates patterns by income level that are consistent with the pattern of takeup rates assumed by the Urban Institute in their recent simulation work (Feder, Uccello, and O'Brien, 1999).[16] We also consider a sensitivity analysis in which the government does solve this liquidity problem in some way; in that case, the numerator in the expression above is after-subsidy premiums, not total premiums.

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[15]Leibman (1998) cites takeup rates of the EITC in the 80-90% range.

[16]At the average income correction factor in our sample of uninsured, this produces an elasticity of -0.53. This estimate is lower than that of Gruber and Poterba (1995), who suggest elasticities of -1 or greater (in absolute value). The upper bound elasticity is similar to recent estimates by Royalty (1999). The average elasticity is somewhat higher than the range of -0.33 to -0.4 presented in Marquis and Long (1994).

Firm dropping of insurance offering: We assume that the likelihood of firm dropping varies by firm size, and use linear functions running from 0 at a 0% subsidy to some upper bound at a 100% subsidy. For policies which restrict eligibility to those not offered insurance coverage, we assume that the upper bound on dropping is 45% for firms with fewer than 10 employees; 35% for firms with 10-24 employees; 20% for firms with 25-99 employees; 5% for firms with 100-499 employees; 3% for firms with 500-999 employees; and 0 for firms with 1,000 employees or more. This produces a sample average dropping rate of roughly 10% for a 100% subsidy; this is comparable to the upper bound estimate of the impact of Medicaid on firm dropping in Shore-Sheppard, Buchmueller, and Jensen (forthcoming), since reactions to private subsidies should be larger than those to Medicaid. For policies which don't restrict eligibility, we assume that these upper bounds on dropping are one-quarter as large (e.g. 10.25% for firms with 1-9 employees). For policies which tax subsidize even employee contributions for employer-provided insurance, we assume no firm dropping.

Takeup among those dropped: Among those dropped by their firms, some will takeup subsidized non-group policies. We assume that if the non-group policy cost is lower than what the employee was paying for group insurance (which depends on the incidence assumption described above), then the employee will take it up. If it is more expensive, then we apply the price elasticity of demand of -0.625 to determine the takeup decision, once again accompanied by the correction factor relating premiums to income.

Switching to spouse's policy if dropped: Some of those dropped by their firms will have spouses who have insurance coverage as well. We assume that if an individual is dropped from their policy, they will consider switching to their spouse's policy (which the spouse is either taking or for which he/she is eligible). We take the difference between the cost of insurance to the dropped spouse and the incremental cost of adding them to their spouse's insurance policy; for example, if the spouse already had single coverage, then this is just the cost of moving to family coverage. We then add 10% to this differential, to capture the fact that the spouse's policy has been revealed to be less attractive to the dropped employee; if it was not, then the family would all be on the spouse's policy. We then apply the price elasticity (-0.625, augmented by the correction factor relating premiums to income) to either the incremental cost of the spousal policy, or the subsidized cost of the non-group policy, whichever is cheaper.

Firm premium contribution reductions: If subsidized coverage is available to those who are offered group insurance, the firm may react to this policy by reducing its contributions towards insurance. We assume that for a 100% subsidy available for non-group coverage only, the firm will reduce its contributions by 10%.

If the subsidy is available for employee premium payments of employer-provided insurance, however, there will be a much larger reaction. If there is a credit for insurance spending, and there is perfect certainty, then firms should reduce contributions by the full amount of the credit, since credits provide 100% subsidies while employer-deductibility provides a subsidy at the

individual's tax rate. In reality, contributions may fall by less, due to uncertainty about the value of the credit to a given employee and issues of timing mismatch between when employee contributions are paid and when the tax credit is received. We therefore assume, somewhat conservatively, that employer contributions are reduced by one-half of the credit amount for which the employee is eligible. If there is a deduction, then employees for whom contributions are now pre-tax are unaffected; for other employees, we once again assume that the employer raises contributions by one-half of the value of the subsidy (which, if the deduction is uncapped, is one-half times the employees tax rate times the employer premium).

Switching from group to non-group policies: As noted above, we assume that individuals only compare their out of pocket costs of group insurance with the subsidized costs of non-group insurance in making their switching decisions (e.g. we assume that an employees' wages rise when he drops his group coverage; rather, we assume that the gains to the employer are spread across all workers). If subsidized non-group insurance is less expensive than the out of pocket costs of existing group coverage after contributions have been reduced, then individuals will switch to some extent from their group policies. We assume that switching is determined according to the following formula:

$$0.625 * \frac{\text{(out of pocket costs of group policy - post-subsidy costs of non-group policy)}}{\text{total cost of group policy}}$$

That is, individuals will be more likely to switch as their financial gain from doing so is larger, relative to the underlying quality of the product that they are leaving behind when they move to the non-group market. That is, at a given level of financial gain from moving to the non-group market, there will be less switching among those who have better group policies (as proxied by total cost).[17]

Employee dropping of insurance because contributions are rising: If firms increase their contributions, then employees may choose to drop their coverage. We assume an elasticity of insurance coverage at the firm with respect to its cost of -0.625. For applying this elasticity, we take the relevant base of insurance costs to be the full costs, including the employer share, as per

[17]This averages to only 0.025 in our sample of group-insured persons for the base policy, since for roughly 90% of our sample the out of pocket expenses of group insurance remain lower than the subsidized non-group policy cost. Our choice of this base figure (0.625) reflects a balancing of two literatures. On the one hand, Cutler and Gruber (1996) estimates imply that, of those privately insured who became eligible for Medicaid, 20% switched to the public insurance program; this provides a lower bound on the amount of switching if there is stigma around public insurance receipt. At the same time, Dowd and Feldman (1994) and Cutler and Reber (1998) estimate enormous elasticities of switching across group insurance plans, on the order of 2 or more. This is clearly an upper bound, since group insurance plans are much more comparable to each other than any group plan is to non-group insurance.

our average incidence assumption. We once again augment this elasticity with a correction for premiums relative to income; in this case, the numerator is the employee share of group premiums.

Individuals increase takeup of employer-provided insurance because employee contributions are tax subsidized: For some policy options, employee contributions to employer-provided health insurance will be tax subsidized. This may lead some employees who were not taking up coverage to do so. We assume in this case that when employee contributions (after-subsidy) go to zero, takeup of employer insurance goes to 91%, which represents full takeup by those who are eligible for employer insurance (9% of employees on average were ineligible for employer insurance in 1997, according to Farber and Levy, 1999). We linearize the change in insurance coverage between no change at current premium sharing levels and a 91% increase for no employee contributions.

Switching from Medicaid to non-group insurance: If there is some stigma associated with public coverage, then some who are on the public program may switch back to non-group insurance when it is subsidized. We assume that the switching to non-group insurance is a function of the available subsidy; it is 0 at a 0 subsidy, and 20% at a 100% subsidy, and linear in between, once again augmented by the income correction factor.

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Table 1A:
Refundable $1,000/$2,000 Credit for Non-Group Insurance, All Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	---	13,285
Total Takeup of Subsidy	18.37	8.2	----
Previously non-group	8.60	57.2	7,006
Previously uninsured	4.72	11.1	4,655
Previously employer-insured	4.68	3.2	1,824
Previously Medicaid	0.36	1.8	-200
Total Change in Population Size			
Non-group	9.77	65.0	----
Uninsured	-4.03	-9.5	----
Employer-Insured	-5.37	-3.7	----
Firm dropped to non-group	-1.05	-0.7	---
Firm dropped to uninsured	-0.12	-0.1	---
Switch to non-group	-3.64	-2.5	---
Uninsured due to decreased contributions	-0.57	-0.4	---
Medicaid	-0.36	-1.8	----
Cost per Newly Insured ($1999)			$3,296

Table 1B: Distributional Analysis

Group	Net Cost ($1999 Millions)	Percent of Costs	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$3.489	26.2	4.39	8.6	-1.27	-6.6	$2,739
100-200% of FPL	$4,012	30.2	5.31	11.6	-1.64	-13.1	$2,447
200-300% of FPL	$2,478	18.7	3.50	9.2	-0.71	-13.1	$3,506
300-400% of FPL	$1,466	11.0	2.20	7.7	-0.24	-11.3	$6,040
>400% of FPL	$1,840	13.9	2.97	4.8	-0.17	-5.3	$10,956

Table 2A:
Non-Refundable $1,000/$2,000 Credit for Non-Group Insurance, All Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	----	6,978
Total Takeup of Subsidy	11.10	4.9	----
Previously non-group	5.14	34.2	3,638
Previously uninsured	2.36	5.5	2,194
Previously employer-insured	3.53	2.4	1,181
Previously Medicaid	0.06	0.3	-35
Total Change in Population Size			
Non-group	5.95	39.6	----
Uninsured	-1.82	-4.3	----
Employer-Insured	-4.07	-2.8	----
Firm dropped to non-group	-0.80	-0.5	----
Firm dropped to uninsured	-0.09	-0.06	----
Switch to non-group	-2.73	-1.9	----
Uninsured due to decreased contributions	-0.45	-0.3	----
Medicaid	-0.06	-0.3	----
Cost per Newly Insured ($1999)			$3,827

Table 2B: Distributional Analysis

Group	Net Cost (1999 Millions)	Percent of Total Costs	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$125	1.8	0.39	0.8	-0.09	-0.5	$1,337
100-200% of FPL	$1,418	20.3	2.29	5.0	-0.69	-5.5	$2,058
200-300% of FPL	$2,131	30.5	3.24	8.5	-0.63	-11.6	$3,383
300-400% of FPL	$1,464	21.0	2.20	7.7	-0.24	-11.3	$6,031
>400% of FPL	$1,840	26.4	2.97	4.8	-0.17	-5.3	$10,955

Table 3A:
Uncapped Deduction for Non-Group Insurance, All Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	----	871
Total Takeup of Subsidy	6.32	2.8	----
Previously non-group	4.73	31.4	1,394
Previously uninsured	0.58	1.4	186
Previously employer-insured	0.99	0.7	-689
Previously Medicaid	0.01	0.1	-20
Total Change in Population Size			
Non-group	1.59	10.6	----
Uninsured	-0.25	-0.6	----
Employer-Insured	-1.33	-0.9	----
Firm dropped to non-group	-0.30	-0.2	----
Firm dropped to uninsured	-0.10	-0.1	----
Switch to non-group	-0.70	-0.5	----
Uninsured due to decreased contributions	-0.24	-0.2	----
Medicaid	-0.01	-0.1	----
Cost per Newly Insured ($1999)			$3,544

Table 3B: Distributional Analysis

Group	Net Cost (1999 Millions)	Percent of Total Cost	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$52	6.0	0.41	0.8	-0.05	-0.3	$1,002
100-200% of FPL	$199	22.8	1.61	3.6	-0.16	-1.3	$1,231
200-300% of FPL	$252	28.9	1.64	4.3	-0.09	-1.6	$2,919
300-400% of FPL	$178	20.4	1.09	3.8	-0.0003	-0.02	517,011
>400% of FPL	$190	21.8	1.57	2.5	0.05	1.7	$----

Table 4A:
Refundable $1,000/$2,000 Credit for Non-Group Insurance, Only Non-Offered Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	----	6,153
Total Takeup of Subsidy	10.03	4.5	----
Previously non-group	3.67	24.4	2,991
Previously uninsured	2.79	6.5	2,740
Previously employer-insured	3.39	2.3	525
Previously Medicaid	0.19	0.9	-104
Total Change in Population Size			
Non-group	6.36	42.3	----
Uninsured	-2.10	-4.9	----
Employer-Insured	-4.07	-2.8	----
Firm dropped to non-group	-3.17	-2.2	----
Firm dropped to uninsured	-0.63	-0.5	----
COBRA to non-group	-0.27	-0.2	----
Medicaid	-0.19	-0.9	----
Cost per Newly Insured ($1999)			$2,927

Table 4B: Distributional Analysis

Group	Net Cost ($1999 Millions)	Percent of Total Cost	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$2,041	33.2	2.56	5.0	-0.8	-4.1	$2,552
100-200% of FPL	$2,191	35.6	3.13	6.8	-0.93	-7.4	$2,353
200-300% of FPL	$1,129	18.3	1.91	5.0	-0.35	-6.5	$3,197
300-400% of FPL	$496	8.1	1.12	3.9	-0.05	-2.3	$9,894
>400% of FPL	$298	4.8	1.31	2.1	0.03	1.0	$----

Table 5A:
Refundable $1,000/$2,000 Credit for Any Insurance Purchases, All Eligible

	Number of Persons	Percent of Insurance Category	Net Cost ($1999)
Total Cost in 1999 dollars	----	----	62,177
Total Takeup of Subsidy	127.28	56.5	----
Previously non-group	8.54	56.8	6,511
Previously uninsured	12.43	29.1	9,307
Previously employer-insured	105.73	72.7	46,906
Previously Medicaid	0.58	2.9	-548
Total Change in Population Size			
Non-group	3.41	22.7	----
Uninsured	-12.43	-29.1	----
Employer-Insured	9.60	6.6	----
Medicaid	-0.58	-2.9	----
Cost per Newly Insured			$5,003

Table 5B: Distributional Analysis

Group	Net Cost ($1999 Millions)	Percent of Total Costs	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$7,442	12.0	12.22	24.0	-3.49	-18.0	$2,132
100-200% of FPL	$15,243	24.5	28.65	62.7	-4.79	-38.2	$3,179
200-300% of FPL	$13,562	21.8	27.45	71.9	-2.23	-41.1	$6,091
300-400% of FPL	$10,008	16.1	21.68	75.9	-0.94	-43.7	$10,667
>400% of FPL	$15,921	25.6	37.29	60.2	-0.98	-30.9	$16,258

Table 6A:
Refundable $500/$1,000 Credit for Non-Group Insurance, All Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	----	3,838
Total Takeup of Subsidy	11.43	5.1	----
Previously non-group	7.36	49.0	3,184
Previously uninsured	2.11	4.9	1,157
Previously employer-insured	1.74	1.2	-335
Previously Medicaid	0.21	1.1	-168
Total Change in Population Size			
Non-group	4.07	27.0	----
Uninsured	-1.71	-4.0	----
Employer-Insured	-2.14	-1.5	----
Firm dropped to non-group	-0.47	-0.3	---
Firm dropped to uninsured	-0.09	-0.06	---
Switch to non-group	-1.27	-0.9	---
Uninsured due to decreased contributions	-0.30	-0.2	---
Medicaid	-0.21	-1.1	----
Cost per Newly Insured ($1999)			$2,239

Table 6B: Distributional Analysis

Group	Net Cost ($1999 Millions)	Percent of Costs	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$1,195	31.1	3.01	5.9	-0.57	-3.0	$2,093
100-200% of FPL	$1,193	31.1	3.26	7.1	-0.68	-5.4	$1,750
200-300% of FPL	$690	18.0	2.15	5.6	-0.29	-5.3	$2,385
300-400% of FPL	$389	10.1	1.33	4.7	-0.10	-4.8	$3,788
>400% of FPL	$371	9.7	1.67	2.7	-0.07	-2.2	$5,325

Table 7A:
Refundable $2,000/$4,000 Credit for Non-Group Insurance, All Eligible

	Number of Persons (Millions)	Percent of Insurance Category	Net Cost ($1999 Millions)
Total Cost in 1999 dollars	----	---	37,945
Total Takeup of Subsidy	32.27	14.3	----
Previously non-group	10.02	66.7	13,368
Previously uninsured	8.78	20.6	12,388
Previously employer-insured	12.90	8.9	12,376
Previously Medicaid	0.57	2.8	-187
Total Change in Population Size			
Non-group	22.24	147.9	----
Uninsured	-7.72	-18.1	----
Employer-Insured	-13.95	-9.6	----
Firm dropped to non-group	-2.04	-1.4	---
Firm dropped to uninsured	-0.11	-0.1	---
Switch to non-group	-10.86	-7.5	---
Uninsured due to decreased contributions	-0.94	-0.6	---
Medicaid	-0.57	-2.8	----
Cost per Newly Insured ($1999)			$4,915

Table 7B: Distributional Analysis

Group	Net Cost ($1999 Millions)	Percent of Costs	Subsidy Takeup (Millions)	Percent of Group	Change in Uninsured (Millions)	Percent of Unins.	Cost per Newly Insured ($1999)
<100% of FPL	$7,692	20.3	6.32	12.4	-2.17	-11.2	$3,538
100-200% of FPL	$10,983	28.9	9.21	20.2	-3.23	-25.7	$3,401
200-300% of FPL	$7,616	20.1	6.55	17.2	-1.46	-26.9	$5,222
300-400% of FPL	$4,794	12.6	4.24	14.9	-0.49	-22.8	$9,821
>400% of FPL	$6,860	18.1	5.94	9.6	-0.37	–11.7	$18,518

Table 8

	Total takeup	Total cost	Change in uninsured	Change in non-group insured	Change in employer insured	Cost per newly insured	% of benefits for <200% FPL
50% of Costs Subsidized	14.44	7,028	-2.81	6.44	-3.44	2,503	60.7
Phase-out from $30,000 to $50,000	15.17	10,898	-3.71	7.73	-3.67	2,938	68.8
No liquidity constraints	19.91	14,652	-5.46	11.36	-5.37	2,683	59.5
$2,000/$4,000 cap and no liquidity constraints	37.11	44,345	-12.10	27.13	-13.93	3,665	54.9
10% lower non-group costs	20.86	14,569	-4.94	12.06	-6.71	2,951	55.8
Lower switching elasticity	17.07	12,222	-4.02	8.47	-4.08	3,037	59.0
Lower price elasticity	16.78	11,691	-2.56	8.14	-5.20	4,575	55.0