Abstract - Enrollment in Health Savings Accounts (HSAs) and the high deductible health insurance plans that go with them is increasing rapidly. The accounts benefit from favorable tax status, and President Bush has proposed further expanding tax incentives that favor HSAs. The goal of these policies is to encourage more efficient use of health care resources by improving consumer incentives. This could result in lower health expenditures and lower health insurance premiums. Much has been written in the popular press about HSAs recently, but unfortunately many have incorrectly interpreted the underlying economics. This paper clarifies the incentive and spending effects of HSAs both conceptually and through simulation modeling. We find that switching an average risk pool from a traditional Preferred Provider Organization plan to a typical HSA plan would decrease their spending by five percent.

INTRODUCTION

Health expenditures in the United States have increased rapidly over the past several decades and promise to continue growing at least as quickly for the foreseeable future. Health spending as a share of GDP has risen from under six percent in 1965 to 16 percent in 2004 and is expected to reach 20 percent by 2015 (Borger, Smith, Truffer, Keeham, Sisko, Poisal and Clemens, 2006). Real per capita health expenditures have risen 44 percent in the last ten years alone, increasingly straining those individuals and institutions that finance health care. Furthermore, there are increasingly large social welfare losses associated with the fact that these health care consumption decisions are not being made by individuals equating full marginal costs with the marginal benefits of each unit of care.

Many distortionary forces operate in the health care sector, the tax code not least among them. Since the 1940s, tax law has excluded the value of employer-provided health insurance premiums from income and payroll taxation. By contrast, most out-of-pocket health spending is not tax deductible. This has resulted in the incentive to purchase health insur-
Insurance characterized by low deductibles, low coinsurance rates, and pre-paid coverage of elective and non-catastrophic care, all of which dull patient incentives to be cost-conscious consumers. For a person in a 15 percent federal income tax bracket whose income is also subject to 15.3 percent payroll taxes, a $1,000 medical expense would require forgoing only $700 of non-health consumption if that expense were incorporated in an insurance plan with a tax-preferred premium, but the opportunity cost would generally be the full $1,000 if the expense were paid out-of-pocket. This creates a powerful disincentive to purchase a high deductible health plan (HDHP).

A variety of policy tools could be used to remove the historical HDHP tax disincentive. One alternative would be to remove the tax exclusion for employer-sponsored health insurance premiums, making most health spending subject to taxation. A second alternative would be to extend premium tax preferences to out-of-pocket expenditures, subsidizing all health spending (Cogan, Hubbard and Kessler, 2005). A third alternative would be to allow tax-free contributions to savings accounts, from which out-of-pocket expenditures could be paid pre-tax. These options each have different pros and cons, discussed briefly below. This paper focuses not on detailed comparisons of the three options, but rather on exploring the third approach in more detail.

HEALTH SAVINGS ACCOUNTS

HSA rules

HSAs were created as part of the 2003 Medicare Modernization Act, and were first available in 2004. HSAs are savings accounts to which individuals may contribute pre-tax dollars that can be used to pay for current and future health expenditures. They are private accounts, fully owned by the individual, portable should the individual change jobs. They function as true savings accounts with accruable and interest-bearing balances which grow over time tax-free. Both contributions to and disbursements from the HSA are tax-free as long as they are spent on health care. They, thus, offer several advantages over other tax-preferred accounts such as Flexible Spending Arrangements (the usefulness of which are limited by the “use-it-or-lose-it” feature) and Health Reimbursement Accounts (which are employer-, not employee-, owned and, thus, not portable).

Current HSA law requires that the accounts be combined with high-deductible health plans with minimum deductibles (a floor of $1,050 for individuals and $2,100 for families in 2006) and maximum annual out-of-pocket (OOP) limits (capped at $5,250 for individuals or $10,500 for families). Account contributions are limited to the lesser of the deductible or $2,700 for individuals and $5,450 for families each year (inflation indexed). Preventive care is generally allowed to be exempted from the deductible. Any funds left in the HSA at age 65 may be withdrawn for non-health use with no penalty (income taxes must be paid) and funds remaining in the HSA may also be bequeathed.

An often overlooked feature of HSAs is that the account contributions may be made at any time during the year, even after the expenditure has been incurred. Credit-constrained individuals can, thus, still receive the full benefits of tax-free OOP spending even without tying up resources in the account ex-ante.

may be spent. This “use-it-or-lose-it” feature encourages people to limit their FSA contributions ex-ante and to over-consume ex-post as the expiration date approaches. Health care spending above 7.5 percent of adjusted gross income is also income tax deductible, but only a small fraction of the privately insured population fall into this category.

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HSA Incentive Effects

HSAs counter the tax–bias against high deductible health policies (HDHPs) because qualified OOP expenditures paid from the HSA account are tax–free, just like expenditures financed via employer insurance premiums. This reduces the tax incentive to pre–pay for health care via insurance. The extent to which HSAs counter the tax preference for insurance more broadly depends on exact HSA rules: under the current HSA contribution rules, individuals are indifferent between premium and OOP financing up to deductibles of $2,700 for an individual policy or $5,450 for a family policy (the HSA contribution limits), but above this level premium financing is again relatively tax–preferred except for those individuals with prior accumulated HSA balances.

The savings account mechanism for encouraging HDHPs has an additional crucial feature that is frequently misunderstood. A policy that simply made all OOP spending tax–preferred would have the impact of subsidizing OOP care, which could raise overall health spending, because individuals would only pay $0.70 in opportunity costs for each $1.00 in OOP care consumed. By contrast, instead of subsidizing OOP spending directly, HSAs instead lower the cost of saving a dollar in an HSA account. The opportunity cost of spending money in that account on health care at any given moment is still $1.00 of future consumption. Thus HSAs can counter the bias against HDHPs without introducing incentives that subsidize marginal health care spending relative to other consumption.

Proposals to Expand HSAs

HSA plan enrollment has been growing rapidly, with the number of HSA–based insurance policies tripling from one million in 2005 to three million by early 2006. The Treasury department has estimated that, under current law, 25–30 million people will enroll in HSA plans by 2010 (U.S. Treasury Department, 2006a). The President’s 2007 budget (for explanatory details, see U. S. Department of Treasury (2006b)) included proposals to expand the attractiveness of HSAs, including:

(1) Tax subsidies for HSA–based insurance plan purchase, including making the premiums deductible for all purchasers; provision of tax credits for low–income purchasers; and tax credits that offset the payroll taxes paid on premiums. These tax subsidies would likely increase the size of the HSA market and, thus, foster competition and the development of cost–saving informational tools for consumers.

(2) Tax subsidies to remove the perverse incentives that make health care cheaper to purchase via pre–paid insurance than via out–of–pocket payments, including tax credits to offset payroll taxes paid on HSA account contributions by individuals outside section 125 cafeteria plans; and increasing HSA contribution limits to the plan OOP maximum, to allow all OOP payments by HSA holders to be made with pre–tax dollars. This would also lower the after–tax net burden to high spenders, making HSAs more attractive to the chronically ill.

(3) Regulatory change to allow employers to make larger HSA contributions to chronically ill employees than to other employees, in order to entice these costly enrollees onto more efficient HSA plans.

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2 This assumes that people’s HSA balances are never expected to exceed future lifetime health care costs, which will be true for the vast majority of people. Furthermore, because HSA balances can be bequeathed, even those with very large balances will still have incentives to evaluate the benefit of spending account dollars on health care versus other goods if they value the bequest.
Treasury estimates that, if adopted, these proposals could expand HSA enrollment to 40–45 million people by 2010.

**EFFECTS OF HSAS ON HEALTH EXPENDITURES**

By changing the price of out-of-pocket spending relative to insured expenses, HSAs encourage people to enroll in plans with higher cost-sharing (and indeed require a minimum deductible). There is substantial evidence that consumption of health care is sensitive to prices: the RAND Health Insurance Experiment firmly established that medical spending is price-sensitive, and that more generous insurance policies result in higher total health spending (Newhouse, 1993). Using a randomized design, the study found that individuals in health plans with no cost-sharing (“free care plan”) consumed health care costing 45 percent more overall than individuals in an HDHP (95 percent coinsurance plan). This suggests that removing the tax preference for first-dollar coverage insurance plans could improve the efficiency of health care utilization and, thus, substantially improve welfare. In order to gauge the magnitude of this effect, we need to know more about the distribution of health care spending and cost-sharing now.

**Spending and Cost-Sharing Distributions**

To understand better the magnitude of potential spending reductions from HSAs, it is useful to consider what proportion of spending occurs below and above deductible levels and OOP maximums of traditional PPO versus HSA plans. Table 1 compares the characteristics of a typical traditional employer-based PPO policy (based on adjusted averages from the 2005 Kaiser Family Foundation/HRET Employer Health Benefits Survey (Claxton, Gil,

<table>
<thead>
<tr>
<th>Policy</th>
<th>Deductible</th>
<th>Out-of-Pocket Maximum</th>
<th>Coinsurance</th>
<th>Imputed Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional PPO</td>
<td>$400</td>
<td>$2,250</td>
<td>15%</td>
<td>$4,150</td>
</tr>
<tr>
<td>HSA</td>
<td>$2,400</td>
<td>$3,400</td>
<td>15%</td>
<td>$3,106</td>
</tr>
</tbody>
</table>

Sources: Kaiser Family Foundation/HRET Survey (2005); AHIP (2006); Medical Expenditure Panel Survey (2001–2003); author calculations.

Notes: The “Traditional PPO” policy represents the approximate average deductible, OOP maximum, coinsurance, and premium for private employer provided PPO single-person plans reported in the 2005 Kaiser/HRET survey. The “HSA” policy represents the “most popular” HSA-qualified single-person plan reported in the AHIP survey. The HSA premium is imputed based on the model estimation that insurer medical payments would be about 25 percent lower in the HSA than in the PPO.

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3 A crucial question is whether the extra care received in the free care plan was on balance welfare enhancing or reducing, taking into account both its benefits and its costs. Conceptually, individuals on the free care plan would have the incentive to consume extra health care as long as the perceived marginal benefit was greater than zero, while individuals in the HDHP would forgo care with marginal benefit less than marginal cost (when spending under the deductible). Well-informed consumers would allocate consumption more efficiently under the latter plan, which implies that (assuming appropriate financial risk levels relative to risk-aversion) reforming tax policies that penalize HDHPs relative to other plans could be welfare-enhancing. However, some health analysts suggest that individuals are unable to make well-informed health care decisions, and conclude from this that it would be inappropriate to raise cost-sharing above minimal levels. Empirically, individuals on the free care plan used more of both medically inefficacious care and care that is generally efficacious—however, this 40 percent extra care had little measurable health benefit, and is unlikely to have been cost-effective on average. The health benefits that were detected were concentrated among the sick poor, and could likely be conferred more efficiently through targeted modifications to the HDHP such as first-dollar preventive care and low income subsidies.
Finder, Gabel, Pickreign, Whitmore and Hawkins, 2005)) to those of a typical HSA-based policy (based on the most popular 2005 HSA policies as reported by AHIP in 2006 (Yoo and Chovan)). The deductible in the HSA policy is $2,000 higher ($400 vs. $2,400), while the OOP maximum is only $1,150 higher ($2,250 vs. $3,400). Based on data from the Kaiser Family Foundation/HRET survey and from ehealthinsurance, we assume a coinsurance rate in both plans of 15 percent between the deductible and the OOP maximum.

The stepped lines in Figure 1 illustrate the coinsurance rates in these two policies at different levels of spending. The solid stepped line represents the traditional PPO plan, with 100 percent cost-sharing up to the $400 deductible, then 15 percent cost-sharing up to the OOP maximum, which is hit when total spending reaches about $12,700, and zero coinsurance above that. The dashed line represents the HSA coinsurance, which is 100 percent over a larger range than the PPO, but which reaches the OOP max at a lower level of total spending, about $9,100.

Figure 1 also superimposes inverse cumulative health spending distributions to help understand better what portion of spending occurs under different coinsurance rates in the two plans. The distributions are based on Medical Expenditure Panel Survey (MEPS) data from 2001–2003 (inflated to 2006 dollars based on average health care spending annual increases),

**Figure 1.** Coinsurance Rates and Cumulative Health Spending Distributions

Cost–Sharing and Population Percentages

[Diagram showing coinsurance rates and cumulative health spending distributions]

Sources: Author calculations from Medical Expenditure Panel Survey (2001–2003).

Notes: The solid and dotted lines represent the cost–sharing associated with the policies shown in Table 1. The bottom (dark gray) curve shows the fraction of the population with spending above each x-axis value. For example, roughly 10 percent of people have expenditures above $5,000 per year. The middle (medium gray) curve represents the fraction of all health care spending that is in excess of the x-axis cutoff. For example, roughly 40 percent of health care can be accounted for by medical bills incurred after already reaching $5,000. (If a person has medical bills of $15,000, only $10,000 would be included in this measure.) The third (light gray) curve represents the fraction of all health care spending accounted for by people with medical bills over the x-axis cutoff. For example, roughly 70 percent of health care spending is accounted for by people with medical bills over $5,000. (If a person has medical bills of $15,000, all $15,000 would be included in this measure.)
using data from individuals under age 65 who are not on Medicare or Medicaid and who were covered by private health insurance at some point during the year. Three different curves are shown. The lowest (dark gray) curve on the vertical axis represents the proportion of the population whose total annual health expenditures exceed each horizontal axis spending level. For example, 63 percent of people spend above the typical PPO deductible of $400 each year, but only 20 percent of people spend above the typical HSA deductible of $2,400. Similarly, only about five percent of people spend above the HSA OOP maximum, while about three percent of people spend above the PPO OOP maximum.

The middle (medium gray) curve in Figure 1 shows the proportion of total spending that occurs after individuals have reached a particular spending level (the fraction of spending accounted for by medical bills in excess of that threshold). For example, 88 percent of total spending is incurred above the PPO deductible, as opposed to 57 percent of spending that is incurred above the HSA deductible. Similarly, 28 percent of spending is incurred above the HSA OOP maximum, versus 21 percent above the PPO OOP maximum.

Finally, the top (light gray) curve in Figure 1 shows the proportion of total spending that is incurred by individuals whose total spending is above the level indicated by the horizontal axis. This differs from the middle curve because it includes all spending by those individuals: for example, at the $10,000 x–axis cut point all of the medical bills of someone who spends $15,000 would be included in the top light gray curve, while only $5,000 would be included in the middle curve. This curve indicates that 98 percent of spending is incurred by individuals whose spending exceeds the PPO deductible, and 80 percent of spending by those who exceed the HSA deductible. Similarly, just under half (47 percent) of spending is by those who eventually exceed the HSA OOP maximum during the year, compared to 37 percent by those who exceed the PPO OOP maximum. Taken together, the curves can be used to confirm the oft–repeated rule–of–thumb that ten percent of individuals account for 70 percent of expenditures: the bottom curve indicates that the highest ten percent of the population spend above $5,000, and the top curve shows that those who spend above $5,000 incur 70 percent of expenditures.

Some observers have concluded based on this skewed spending distribution that HSAs will have little effect on total spending, but this logic is faulty: there is significantly more cost–sharing under the HSA for a substantial portion of spending. First, 35 percent of spending occurs in the range between the two deductibles (middle curve), where the PPO has 15 percent cost–sharing but the HSA plan has 100 percent, and this difference is likely to cause a substantial behavioral response. Second, although part of the spending in this range is by people who eventually exceed their OOP maximum, they will often not be able to predict this fact until after the expenditures have been incurred. Only a small portion of individuals actually end up exceeding the HSA OOP maximum, and for this non–elderly population this spending is mostly caused by idiosyncratic events. Based on MEPS panel data, of those who exceed the HSA OOP maximum in one year (at about $9,100 total spending), only 21 percent had exceeded that maximum in the previous year. Third, about 50 percent of spending is by those whose total spending is under $8,100. This spending level is well within the cost–sharing range of typical HSA plans. If even 50 percent of expenditures could be affected by HSAs, this would be quantitatively important, and this number may be an underestimate. Although we have focused on a typical PPO OOP maximum, many plans from which enrollees may switch have only minimal
cost-sharing, such as most current HMO plans. Furthermore, it is important to keep in mind that HSAs do not preclude the use of other cost-containment tools such as disease management; they should instead be viewed as complementary, and indeed HMO models such as Kaiser Permanente have begun integrating HSA cost-sharing incentives into HMO plans.

**HSA Moral Hazard Effects**

In order to quantify the average moral hazard reduction in health spending from switching from the traditional PPO to the HSA, we need to apply a behavioral elasticity to the change in prices at each point in the spending distribution. We have developed a simulation model to do this, using the microdata from the Medical Expenditure Panel Survey. We assume a price elasticity of demand of –0.20, based on the RAND Health Insurance Experiment (Newhouse, 1993); this will yield conservative moral hazard estimates relative to larger elasticities such as estimated by Eichner (1998). At each spending increment in the distribution of spending under the traditional PPO, we simulate behavioral changes in response to relative differences in coinsurance rates between the plans. As in the RAND episode modeling, we assume that individuals have some expectation of exceeding their deductible or out-of-pocket maximum, which decreases their price sensitivity; we model these expectations as a function of the difference between the budget kink and the incremental spending episode under consideration. To validate our model, we compared our results to those reported by RAND Health Insurance Experiment publications (Newhouse, 1993, table 4.21), and find strikingly similar results (see also Keeler, Malkin, Goldman and Buchanan (1996) and Zabinski, Selden, Moeller and Banthin (1999)).

Based on this simulation model, we estimate that switching an average risk pool from this typical PPO policy to the typical HSA policy would decrease their total health expenditures by five percent. Table 2 shows the behavioral change for different parts of the original PPO spending distribution. The largest effect is among the second group, the 39 percent of individuals who in the traditional PPO would have spent above their deductible but below the HSA deductible of $2,400: they reduce their aggregate expenditures by 21 percent. Those individuals account for 18 percent of total spending; thus that group alone reduces total spending in the pool by 3.6 percent. The 37 percent of individuals who spend below the PPO deductible (the first group) will experience virtually no expenditure reduction in our model. The third group, which would have spent in the traditional PPO

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4 Our model will slightly understate expenditure reductions under HSAs because we do not account for the perverse expenditure-increasing effects of FSAs held by some people under traditional PPOs. Results today may vary from the 1970s RAND effects for a variety of other reasons as well that are not modeled here, including the widespread use of managed care techniques (which could reduce moral hazard effects), improved consumer information (which could allow consumers to respond to incentives more easily), etc.

5 For example, our model assumes that in the HSA plan, individuals whose total expenditures exceed the $2,400 deductible but not the OOP maximum will have anticipated some probability of exceeding the deductible. In the extreme, individuals expecting to exceed the deductible with probability one would spend as if they faced a marginal coinsurance of 15 percent even below the deductible. The higher the total actual expenditures, the higher is our model probability that the individual would expect to exceed the deductible.

6 For example, a RAND policy similar to our traditional policy is the $100 deductible with 25 percent coinsurance up to a $1,000 OOP maximum (inflating up by the medical CPI would yield current values of approximately $300 deductible and $3,000 OOP maximum). When we simulate increasing that deductible from $100 to $300, we predict a 4.9 percent decrease in total health care spending, compared to RAND's 5.0 percent estimate. Similarly, when we simulate switching from RAND's $100 deductible (25 percent coinsurance) plan to their $1,000 deductible plan (equivalent to approximately $3,000 today), we find a 5.1 percent decrease as compared to their 5.0 percent estimated decrease.
above the HSA deductible but below the HSA OOP maximum, would spend less in the HSA plan while still under the HSA deductible because of the inability to perfectly predict future spending, which causes this group to decrease its spending by eight percent. The fourth group is above the HSA OOP maximum but below the PPO OOP maximum and, hence, on the margin would have 15 percent coinsurance in the PPO but zero cost-sharing under the HSA. The result of this higher PPO cost-sharing after exceeding $9,100 in total spending dominates spending reductions that would have occurred while still under the HSA deductible, resulting in a net 2.6 percent spending increase under the HSA. For similar reasons, the final group, with total spending in the zero coinsurance range under both plans, would experience a 2.6 percent spending increase. Taking into account these different incentive effects, the weighted average across the spending distribution yields a net drop in expenditures of 5.0 percent.

Based on calculations from national health expenditure data (Smith, Cowan, Heffler, Catlin and the National Health Accounts Team, 2006) and other sources, we estimate that this would lead to a 0.8 percent decrease in personal health spending among the privately insured population, or about $6.0 billion per year (in 2006 dollars). If the President’s 2007 budget proposals were enacted and 42.5 million people switched to HSAs, then privately insured personal health spending would decrease by 1.2 percent or over $9 billion per year.

Long–Term Expenditure Reductions

This moral hazard reduction is the initial short–run effect on national health expenditures. Greater long–run reductions would arise as these individuals became more cost–conscious health care consumers. Currently, generous insurance policies have dampened individuals’ incentives to choose health care based on value, and instead consumers have strong incentives to choose care based on benefits without regard to price. If one type of care is slightly more efficacious than another, then consumers have the incentive to demand it even if the price is far greater.7 By contrast, as consumers switch into HSAs they will have increased incentives to choose care based on both

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7 In theory there might be a market for insurers offering plans with limited benefits that precluded cost–ineffective treatments, but there are agency problems and legal barriers that make such contracts difficult to offer and enforce.
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health benefits and cost. This will in turn spur cost–reducing technological change that in the long run could cause significant reductions in health care spending. Such change will include both process innovations, such as lower–cost store–based clinics that are beginning to spread now, as well as product innovations that will create new classes of higher–value health care. To help judge the magnitude of the increased incentive for more cost–effective, higher–value technological change, we calculate the average cost–sharing in each plan. Under the typical traditional PPO plan, patients pay about 21 percent of total costs OOP (even less under typical HMOs). By contrast, under the typical HSA plan outlined above, patients pay 37 percent of total costs OOP. This is a major increase in incentives to become cost–conscious health care consumers.

It is extremely difficult to predict the magnitude of expenditure reductions that could be associated with this cost–reducing technological change. The important feature of this change in technological innovation, though, is that it would not just be a one–time intercept shift: it has the potential to lower the trend rate of growth in health care spending. To illustrate the power of changing trend growth rates, consider that if national health expenditure growth rates were lowered from a projected seven percent per year instead to 6.5 percent per year, in ten years this would result in five percent lower total national health expenditures. Put another way, if spending grew half a percentage point less quickly for the next ten years, then national health expenditures as a percent of GDP would be a whole percentage point lower by 2015, a spending reduction of $162 billion that year (in 2006 dollars).

HSA EFFECTS ON CONSUMER BUDGETS

In addition to studying effects on total health care expenditures, we would also like to know the distributional effect of moving to an HSA for consumers with different health expenditures. How would consumers with high expenditures fare under such plans? In this section we calculate the financial implications of switching from a PPO to an HSA–based plan for consumers with different health expenditures, taking into account their premium savings, their increased out–of–pocket expenditures, and their tax subsidies under both current and proposed law.

First we need to estimate the premiums for each of these plans. One of the major benefits of HSA plans to consumers is the lower premium. These premiums are lower than premiums for traditional PPOs both because spending is shifted from premiums to OOP cost–sharing, but also because of the reduction in low–value spending induced by moral hazard. Using the same plan parameters, health distribution, and estimated five percent moral hazard effect presented above, we estimate that total insurer medical payments would be 25 percent lower in the HSA than the PPO. We then benchmark the traditional PPO premium at the mean PPO premium reported in the 2005 Kaiser Family Foundation/HRET survey, $4,150, and impute the HSA premium as 25 percent lower, $3,106.9

8 Note that these systemic savings would be enjoyed not just by HSA enrollees, but by all consumers (and financers) of health care. This means that the private incentives to enroll in HSAs would not capture the full social benefit of greater cost–savings, implying that it may be socially optimal to subsidize this enrollment.

9 The actual 2005 Kaiser Family Foundation/HRET average HSA premium is slightly lower, $2,700. This may be due to favorable selection or coverage of fewer categories of benefits. We prefer the imputed premium for our calculations in order to compare the plans holding constant all factors except cost–sharing, which also yields a more conservative estimate of potential savings to enrollees.

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Figure 2 presents the after-tax spending for individuals in each plan at different spending levels.\textsuperscript{10} Very low spenders will clearly save money by choosing the HSA: the 68 percent of the under-65 privately insured population with health spending below $1,600 would spend less in total (on premiums and OOP) with the HSA than the traditional PPO, under either current law or the proposed HSA expansions. The 3.2 percent of the population spending above $13,000 would be indifferent between the HSA and the PPO under current law, but would be better off under the proposed reforms. The reforms make high spenders (the four percent of the population spending over $11,000) better off under HSAs because the increased

\textsuperscript{10} We assume that these plans are employer-sponsored, and apply tax treatment accordingly. We conservatively assume that PPO enrollees will pay for 50 percent of their OOP tax-free through an FSA (although the true fraction may be lower). Alternative FSA assumptions result in shifted curves (for example, with zero FSA contributions the maximum loss in an HSA is reduced from the $545 in Figure 2 to about $300), but similar overall patterns. The marginal tax rate used for illustration is 15 percent income tax plus 15.3 percent payroll tax. Alternate tax rate assumptions also shift the curves (for example the maximum loss in an HSA would be $623 in a 0 percent income tax bracket), but here, too, result in very similar overall patterns. We also assume that the incidence of both the premium and the tax subsidy ultimately falls on the employee (for discussion of this issue, see Gruber (2000)).
HSA contribution limits will provide them with larger tax breaks for their OOP spending.\textsuperscript{11}

Not all employees would be better off in the HSA each year, however. The 30 percent of the population spending between $1,600 and $13,000 would be worse off in the HSA in that particular year, by as much as about $545. Some of these people would be in this category for idiosyncratic reasons due to bad luck in a single year. If in most other years they expected to be low spenders, then over the course of multiple years they would still likely be better off on average in the HSA. Other employees with chronic illnesses may systematically be in the middle spending range in most years and, thus, may be consistently worse off in the HSA than the PPO. This is unfortunate, since this group would experience the largest reduction in moral hazard–induced low–value care. It may, thus, be in some employers’ interests to encourage this group to enroll in HSAs. It is for this reason that the President’s 2007 budget proposed allowing employers to make larger contributions to the HSAs of chronically ill employees.

This example assumed that employers offered only the “typical” HSA plan. It is possible to create an actuarially comparable alternative HSA plan that makes enrollees at all expenditure levels better off with the HSA plan than with the traditional PPO under the proposed HSA expansions. Under an individual policy with a deductible of $1,200 and a premium of $3,599, for example, all employees in the 15 percent income tax bracket would prefer the HSA under the expanded contribution limits and tax preferences. At this deductible level, the moral hazard spending reduction would not be quite as great. Total expenditures would drop by 4.1 percent, and 30 percent of spending would be paid OOP.

The above example illustrated the case of insurance offered through an employer. For those people who are instead purchasing health insurance on the individual market, the HSA under the proposed expansions strictly dominates the PPO because of the favorable tax treatment (Figure 3). It is worth noting that low–income populations are much less likely to be offered health insurance by their employers: on average over 20 percent of the non–elderly population in working families lacked access to employer insurance in 2003—but while only 11 percent of those with incomes over 400 percent of the poverty line lacked access, 45 percent of those under 200 percent of the poverty line did (Strunk and Reschovsky, 2004).

DISCUSSION

The bias in the tax code towards first–dollar employer–sponsored health insurance has induced substantial (and well–known) inefficiencies in the allocation of health resources. There are several different means by which this bias could be removed. Eliminating the exclusion for employer insurance altogether, while potentially an efficient solution from a theoretical perspective, may be problematic from a public health perspective.\textsuperscript{12}

If health care has a public good component, then some level of subsidy or other encouragement to obtain insurance may be optimal. Studies have shown that removal of the current subsidy could

\textsuperscript{11} Note, too, that while the distribution of public subsidies via the tax exclusion would be roughly equal for the PPO and the HSA under current law, the expansion would redistribute the tax subsidy away from the healthy and towards those with high expenditures. We currently spend over $200 billion on this tax exclusion when considering both income and payroll taxes (Council of Economic Advisers, 2006).

\textsuperscript{12} It might also be difficult from a practical perspective. Past efforts to remove the exclusion have encountered strong resistance; for example, President Reagan abandoned this strategy despite being able to pass major reforms in other areas of the tax code.
prompt employers to drop coverage for their employees, some of whom may not obtain other insurance and will then become uninsured.

Alternatively, extending the tax subsidy to all health spending, while removing the bias against high–deductible policies, would remain distortionary: the marginal price of health care would be lower than the marginal cost of other goods—by 30 percent for many people. This would, thus, provide the incentive to consume more health care goods and services and would reduce the incentive for efficient use of health care resources.

Health savings accounts provide a promising avenue towards a more efficient use of resources. They can remove the bias against high–deductible policies, while limiting the incentive to over–consume health care. Our estimates suggest that people switching from typical traditional plans to HSA–based plans would reduce their health care spending by an average of five percent. In the long run, savings to the health care system could be substantially greater, as increased price sensitivity spurs the development of more cost–effective technology.

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