

Using Health Savings Accounts as Long-Term Investment Vehicles

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Abstract: Health savings accounts (HSAs) have been growing in popularity since their introduction in 2004. This article develops two decision models related to HSAs: (1) the decision to invest in an HSA or outside an HSA, and (2) the decision to pay for medical expenses with HSA funds or non-HSA funds. Financial planners can apply the decision models to better determine their clients' best use of HSAs.

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Health savings accounts (HSAs) are tax-preferenced accounts through which qualified taxpayers are encouraged to save for and manage their own health expenses. Contributions to HSAs are tax deductible or excluded from gross income, investment returns in HSAs are not taxed as they are realized, and distributions from HSAs are tax free if used to pay for qualified medical expenses. The possibility of tax-preferenced treatment at all stages of an investment vehicle's life is unusual in our tax system, making HSAs an increasingly important investment opportunity.¹

HSAs have been growing in popularity since their introduction in 2004. A GAO study found that many HSA participants liked that they were able to save for health costs and that HSAs were tax advantaged, although they had some reservations about the high-deductible health plans (HDHPs) with which HSAs are coupled.² A recent study found that the number of people covered by HSA/HDHP plans has grown from 1 million in March 2005 to 3.2 million in January 2006 to 4.5 million in January 2007.³ Some studies report that employers pay premiums that are 20% to 30% less if they use policies that are HSA compatible rather than policies with lower deductibles.⁴ Many believe that HSAs better enable employers, especially small businesses, to provide cost-effective health coverage for their employees.

A taxpayer enrolled in an HSA must make several decisions:⁵

- Whether and how much he or she should contribute to the HSA
- How much of the HSA funds to use for medical expenses
- Which medical expenses to pay from the HSA
- Whether to pay for medical expenses from the HSA

or save it for future use

- Which company will hold the HSA
- What type of investments to hold in the HSA

A financial professional is well positioned to assist clients with most, if not all, of these decisions.

This article focuses on the first and fourth decisions: whether one should contribute amounts to an HSA or invest them outside of an HSA, and whether one should pay for medical expenses from HSA funds or non-HSA funds. We develop mathematical models to analyze the two decisions. Our results show that contributing to an HSA will tend to be advantageous when the current tax rate is higher, the future tax rate is lower, the after-tax return on non-HSA investments relative to the before-tax return on HSA investments is lower, and the investment horizon is longer. Using non-HSA funds to pay for medical expenses will tend to be advantageous when the current tax benefit from deducting medical expenses is higher, the future tax rate is lower, the after-tax return on non-HSA investments relative to the before-tax return on HSA investments is lower, and the investment horizon is longer.⁶ However, these results for the two decisions are only tendencies; the specific tax rates, returns, investment horizons, and tax benefits for which these tendencies are true depend on the circumstances.

In addition, our results suggest that it will often be advantageous to use HSAs as a long-term investment vehicle. That is, despite Congress's intention that taxpayers use HSAs to save for and pay for medical expenses, many of them may be better off using HSAs for retirement or other longer-term investment objectives. Our results also suggest that many taxpayers can best use HSAs as a long-term investment to help finance their medical expenses in retirement.

The next section of the article reviews the tax law relevant to HSAs. The article then develops the mathematical model to analyze the HSA investment decision and payment-source decision, and it provides numerical examples to illustrate the model's use. We follow this by discussing factors that are important to these decisions but that are not captured by our model and provide concluding comments.

Background and Relevant Tax Law

Many specific requirements address the creation of, contribution of amounts to, and distribution of amounts

from HSAs. The following summarizes the IRC Sec. 223 requirements for HSAs. For a more detailed explanation, consult IRC Sec. 223 or IRS Publ. No. 969.⁷ An HSA is a trust account created to pay for an eligible taxpayer's current and future qualified medical expenses. The HSA can be set up with a bank, insurance company, or other IRS-approved trustee or custodian. HSA funds can be invested in most types of investments, including regular bank accounts, annuities, certificates of deposit, stocks, bonds, and mutual funds, but they cannot be invested in life insurance contracts. HSA contributions are deductible "above the line" (i.e., before adjusted gross income, whether itemized deductions or the standard deduction is claimed). A taxpayer's employer may also contribute to the taxpayer's HSA.⁸ These employer contributions are excluded from the taxpayer's federal gross income, but they are not deductible by the taxpayer. Employer contributions to HSAs are not subject to Social Security and Medicare taxes nor federal unemployment taxes.⁹

Earnings in the HSA (e.g., interest, dividends, capital gains) are tax free while still in the account. A distribution from the HSA is tax free if it is used to pay for qualified medical expenses, but the taxpayer cannot also claim these medical expenses as an itemized deduction. Qualified medical expenses are unreimbursed amounts paid for the taxpayer's medical care or that of the taxpayer's spouse or dependents. The definition of medical care for HSA purposes is generally the same as it is for medical expense deduction purposes under IRC Sec. 213(d)(1). Medical care for HSA purposes also includes amounts paid for nonprescription drugs, but it does not include most types of health insurance (qualified long-term care insurance and nonsupplemental Medicare coverage are qualified medical expenses for HSA purposes). Examples of qualified medical expenses are fees paid for visits to doctors and hospitals, mileage for those visits, and the cost of both prescription and nonprescription drugs.

Any distribution that is not used for qualified medical expenses is included in the taxpayer's taxable income. The distribution is also subject to an additional 10% penalty, but this penalty is waived if the distribution is made after the taxpayer has attained age 65, has died, or has become disabled. Unlike employer-provided health insurance but like an IRA, an HSA is portable: it stays with the taxpayer and not with his or her employer. If the

taxpayer changes jobs or leaves the workforce entirely, the HSA's balance continues to be available to the taxpayer.¹⁰

Taxpayers are eligible to participate in an HSA if they meet certain requirements. First, they must be covered by a high deductible health plan (HDHP). Second, they generally must not have coverage under another health plan that is not an HDHP and that covers any of the benefits covered by the HDHP. Third, they must not be enrolled in Medicare. Fourth, they cannot be claimed as someone else's dependent. Unlike some other savings vehicles (e.g., Roth IRA), an HSA does not have income limits on who may contribute. There is no requirement for a taxpayer to have any earned income to contribute to an HSA.¹¹

An HDHP is a health plan that can provide self-only coverage or family coverage. For 2008, it must have an annual deductible of at least \$1,100 (\$2,200 for family coverage), and the sum of the annual deductible and annual out-of-pocket expenses cannot exceed \$5,600 (\$11,200 for family coverage).¹² An HSA may be used to reimburse the out-of-pocket expenses not covered by the HDHP.

Contributions to an HSA plan in 2008 are limited to \$2,900 (\$5,800 if family coverage).¹³ Prior to 2007, HSA contributions were also limited to the HDHP's annual deductible, but only the dollar limitation now applies.¹⁴ A taxpayer age 55 or older is allowed an additional catch-up contribution of \$900 in 2008.¹⁵ The contribution limits are reduced by any contributions made to the HSA by the taxpayer's employer, which means that the dollar limitation applies to the aggregate contributions of the taxpayer and his or her employer. Similar to IRA contributions, a taxpayer can contribute to an HSA up until the tax return filing deadline (without extension). A taxpayer reports contributions to his or her HSA, as well as any taxable and

nontaxable distributions from it, on form 8889.

In comparison to the "use-it-or-lose-it" rule for health flexible spending arrangements (FSAs), where a year-end unused balance is forfeited, any funds remaining in an HSA account at the end of the plan year roll over and are available to the taxpayer in the next year. These funds may be used for future medical expenses or may be withdrawn for some other purpose. This means that a taxpayer can use an HSA for long-term, nonmedical purposes (e.g., retirement), although this opportunity comes with ordinary income taxation and possibly a 10% penalty.

Decision Framework

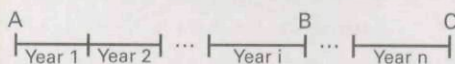
The analysis in this section considers two decisions the taxpayer must make with respect to the HSA. First, the taxpayer must decide each year whether to invest funds in an HSA or in an investment outside of an HSA (the investment decision). Second, the taxpayer must decide whether to pay for qualified medical expenses with HSA funds or with non-HSA funds (the payment-source decision). Figure 1 depicts the timing of the investment decision, the payment-source decision, and the end of the taxpayer's investment horizon.

Since the analysis of the investment decision depends on the outcome of the payment-source decision, this framework focuses first on the latter decision. The following notation and assumptions are used:¹⁶

- H_i = HSA balance at the end of year i , immediately before amounts, if any, are withdrawn to pay for year i qualified medical expenses.
- N_i = value of non-HSA investments at the end of year i , immediately before amounts, if any, are withdrawn to pay for year i qualified medical expenses.
- t_i = year i marginal tax rate.
- M_i = year i qualified medical expenses.
- TB_i = tax benefits from paying year i qualified medical expenses from non-HSA funds (e.g., tax savings from deducting such expenses), as a percentage of the expenses.
- C_1 = amount of pretax income the taxpayer will be investing in year 1. If the investment is made in an HSA, then all C_1 can be invested. If the investment is made outside of an HSA, then only $C_1(1 - t_1)$ will be available to be invested.

FIGURE 1

Timeline of Decision Framework



- A: Investment decision (invest funds in HSA or non-HSA?)
- B: Payment-source decision (pay for medical expenses with HSA funds or non-HSA funds?)
- C: End of investment horizon (HSA & non-HSA investments liquidated)

- R = before-tax return on HSA investments. This return is net of any fees for the HSA account.
- r = annualized after-tax rate of return on non-HSA investments;¹⁷ $R > r$.
- n = number of years in investment horizon (i.e., the year in which investments, both HSA and non-HSA, will be liquidated).

Payment-Source Decision

At the end of an intermediate year i , the taxpayer's HSA balance is H_i , and the non-HSA investments are worth N_i . In the absence of any qualified medical expenses in year i or subsequent years, the HSA balance would grow to $H_i(1 + R)^{n-i}$ by the end of the n -year investment horizon, and the value of the non-HSA investments would grow to $N_i(1 + r)^{n-i}$. At that time, the HSA would be subject to taxation, resulting in an after-tax, postliquidation amount of $H_i(1 + R)^{n-i}(1 - \tau_n)$. The non-HSA investments would not be subject to any additional tax; recall that r is the annualized *after-tax* rate of return.

At the end of year i , the taxpayer incurs M_i of qualified medical expenses. If HSA funds are used to pay for them, the after-tax accumulation of the HSA and non-HSA investments will be

$$[(H_i - M_i)(1 + R)^{n-i}(1 - \tau_n)] + [N_i(1 + r)^{n-i}] \quad (1)$$

If non-HSA funds are used to pay for M_i , the after-tax accumulation of the HSA and non-HSA investments will be

$$[H_i(1 + R)^{n-i}(1 - \tau_n)] + \{[N_i - M_i(1 - TB_i)](1 + r)^{n-i}\} \quad (2)$$

The difference between expressions (1) and (2) is whether the M_i payment reduces the current amount and future after-tax accumulation of the HSA portion of the taxpayer's portfolio or the non-HSA portion and whether the M_i payment yields a year i tax benefit.

Subtracting expression (1) from expression (2) and simplifying, the net advantage (disadvantage, if negative) of paying M_i from non-HSA funds rather than HSA funds is

$$[M_i(1 + R)^{n-i}(1 - \tau_n)] - [M_i(1 - TB_i)(1 + r)^{n-i}] \quad (3)$$

The first bracketed term of expression (3) is the forgone HSA after-tax return over the remaining $n - i$ years of the n -year investment horizon if HSA funds are used to pay M_i . Similarly, the second bracketed term is the for-

gone non-HSA after-tax return if non-HSA funds are used. That is, the two bracketed terms represent the opportunity costs of using HSA versus non-HSA funds to pay for M_i . When the opportunity cost of using HSA funds is larger than that of non-HSA funds, expression (3) will be positive, indicating that the after-tax accumulation will be larger if non-HSA funds are used.

Setting expression (3) to be greater than zero and simplifying, it will be advantageous to use non-HSA funds rather than HSA funds to pay M_i if:

$$\tau_n < 1 - (1 - TB_i) \left(\frac{1 + r}{1 + R} \right)^{n-i} \quad (4)$$

Since a τ_n tax rate will be imposed on any HSA balance remaining at the end of the n -year investment horizon, the opportunity cost of using HSA funds to pay for medical expenses increases as τ_n decreases. Using non-HSA funds will be better than using HSA funds if τ_n is sufficiently small.

Denote the right-hand-side of expression (4) as the break-even τ_n . When the break-even τ_n is higher, using non-HSA funds to pay for year i medical expenses will tend to be the better choice; the range of τ_n s that are less than the break-even τ_n is wider. Note in expression (4) that the break-even τ_n depends on the ratio of $1 + r$ to $1 + R$, not the ratio of r to R . For example, if the after-tax return on non-HSA funds is 6% and the before-tax return on HSA funds is 8%, the value of $(1 + r) \div (1 + R)$ is 0.9815. Figure 2 depicts the break-even τ_n for various values of $(1 + r) \div (1 + R)$, given that the remaining investment horizon ($n - i$) is 5, 12, and 25 years and that there is no tax benefit from paying medical expenses from non-HSA funds ($TB_i = 0$, which would occur when medical expenses are less than 7.5% of adjusted gross income).

As the ratio of $1 + r$ to $1 + R$ increases, the opportunity cost of using HSA funds to pay for medical expenses—relative to that of using non-HSA funds—decreases, the break-even τ_n decreases, and it becomes more likely that using HSA funds will be advantageous. As the number of years remaining in the investment horizon increases ($n - i$), the compounding effect of R being larger than r becomes stronger, so the break-even τ_n increases.¹⁸ Thus, for relatively short remaining investment horizons, relatively small differences between the returns on HSA and non-HSA investments, and relatively high liquidation-year tax rates, using HSA funds to

pay for qualified medical expenses is likely to be advantageous. For intermediate-term and longer remaining investment horizons, larger differences between HSA and non-HSA investment returns, and relatively low liquidation-year tax rates, paying for medical expenses using non-HSA funds is likely to be more advantageous.

Figure 2 assumes that there is no tax benefit from paying medical expenses from non-HSA funds. When there is such a benefit, the lines in the graph would shift upward, indicating that the break-even tax rate is higher and that it is less likely to be advantageous to pay for the expenses from HSA funds.

Investment Decision

At the beginning of year 1, the taxpayer has C_i of pretax income to invest. The taxpayer has non-HSA investments worth N_0 and has an already-existing HSA balance of H_0 . Recall from the analysis of the payment-source decision that, at the end of a particular year i in which qualified medical expenses are paid, the taxpayer's HSA balance is H_i and the non-HSA investments are worth N_i . If C_i is invested in an HSA, H_i would equal

$$(H_0 + C_i) (1 + R)^i \quad (5)$$

and N_i would equal

$$N_0 (1 + r)^i \quad (6)$$

That is, the H_0 already-existing HSA balance and the C_i new investment in it would grow at the R tax-free rate

of return for i years, and the N_0 already-existing non-HSA investments would grow at the r after-tax rate of return for i years. If C_i is instead invested in non-HSA investments, H_i would equal

$$H_0 (1 + R)^i \quad (7)$$

and N_i would equal

$$[N_0 + C_i(1 - t_i)] (1 + r)^i \quad (8)$$

Since C_i is not being invested in an HSA, it will be subject to tax and only $C_i(1 - t_i)$ will be available to be invested outside of an HSA.

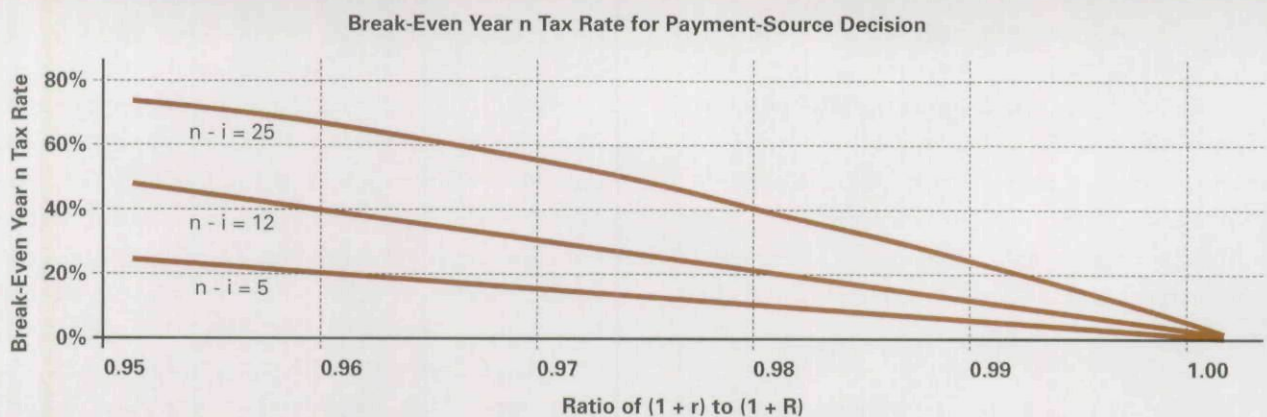
Consider the effect of investing in an HSA versus a non-HSA investment in year 1 on the taxpayer's after-tax accumulation at the end of the n -year investment horizon, given that the payment-source decision will be made to pay the year i qualified medical expenses from HSA funds. The after-tax accumulation that results from making the year 1 investment in an HSA can be found by substituting expressions (5) and (6) for the H_i and N_i terms in expression (1):

$$[(H_0 + C_i) (1 + R)^i - M_i] (1 + R)^{n-i} (1 - t_n) + N_0 (1 + r)^i (1 + r)^{n-i} \quad (9)$$

Similarly, substituting expressions (7) and (8) into expression (1) yields the after-tax outcome of making a non-HSA investment:

$$[H_0 (1 + R)^i - M_i] (1 + R)^{n-i} (1 - t_n) + [N_0 + C_i(1 - t_i)] (1 + r)^i (1 + r)^{n-i} \quad (10)$$

FIGURE 2



Use of non-HSA funds to pay for medical expenses is advantageous if the liquidation year tax rate (t_n) is below a particular break-even line (HSA funds if above). See expression (4) for the formula for the break-even tax rate. The figure assumes a zero tax benefit from using non-HSA funds to pay for medical expenses (TB_i).

Subtracting expression (10) from expression (9) and simplifying, the net advantage (disadvantage, if negative) of making an HSA rather than a non-HSA investment is

$$[C_1 (1 + R)^n (1 - \tau_n)] - [C_1 (1 - \tau_1) (1 + r)^n] \quad (11)$$

The first bracketed term of expression (11) is the year n after-tax accumulation of investing C_1 in an HSA, having it grow at the R before-tax rate of return for n years, and having it taxed at a τ_n rate upon the HSA's liquidation. The second bracketed term is the outcome of investing in a non-HSA, having only $C_1(1 - \tau_1)$ to invest, and having it grow at the r after-tax rate of return for n years. When the after-tax accumulation of making the investment in an HSA is larger than that of investing in a non-HSA, expression (11) will be positive, indicating an investment in an HSA is advantageous.

Setting expression (11) to be greater than zero and solving for τ_n , making an HSA rather than a non-HSA investment results in a larger after-tax accumulation when

$$\tau_n < 1 - (1 - \tau_1) \left(\frac{1 + r}{1 + R} \right)^n \quad (12)$$

When the τ_n tax rate is sufficiently low, the HSA will be taxed lightly upon liquidation and it will be more attractive than the non-HSA investment. Denote the right-hand-side of expression (12) as the break-even τ_n for the investment decision. As the τ_1 current tax rate increases, the break-even τ_n increases, reflecting the higher tax cost of investing outside an HSA and making it more likely that investing in an HSA

will be advantageous. Similarly, as $(1 + r) \div (1 + R)$ decreases and as n increases, the break-even τ_n increases. That is, it will be more likely that investing in an HSA will be advantageous when the after-tax return on non-HSA investments is lower and when the investment horizon is longer.

Figure 3 depicts this break-even τ_n for selected values of n and τ_1 , given that $(1 + r) \div (1 + R)$ varies from 0.95 to 1.00. Note that the break-even τ_n is always larger than τ_1 and that this is especially so for longer investment horizons and lower ratios of $(1 + r)$ to $(1 + R)$. This implies that investing in an HSA will be advantageous if tax rates will be constant or decrease from the year of investment to the year of liquidation, and it may be advantageous even if tax rates increase.

Consider next the circumstance where the year i qualified medical expenses will be paid from non-HSA funds. Substituting expressions (5) and (6) for the H_i and N_i terms in expression (2), the year n after-tax accumulation that results from making the year 1 investment in an HSA is

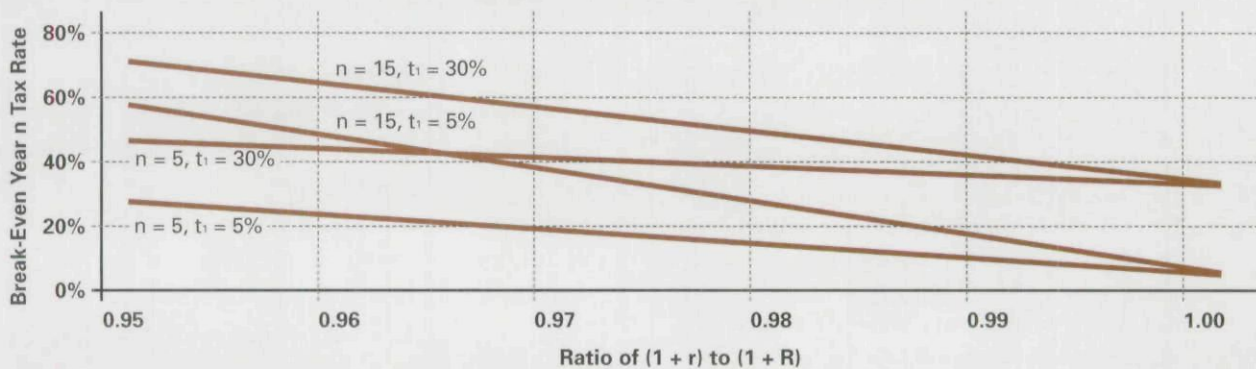
$$(H_0 + C_1) (1 + R)^i (1 + R)^{n-i} (1 - \tau_n) + [N_0 (1 + r)^i - M_i(1 - TB_i)] (1 + r)^{n-i} \quad (13)$$

Similarly, the year n after-tax outcome of making a non-HSA investment is found by substituting expressions (7) and (8) into expression (2):

$$H_0 (1 + R)^i (1 + R)^{n-i} (1 - \tau_n) + \{[N_0 + C_1(1 - \tau_1)] (1 + r)^i - M_i(1 - TB_i)\} (1 + r)^{n-i} \quad (14)$$

FIGURE 3

Break-Even Year n Tax Rate for Investment Decision



Investing in an HSA is advantageous if the liquidation year tax rate (τ_n) is below a particular break-even line (in a non-HSA if above). See expression (12) for the formula for the break-even tax rate.

Subtracting expression (14) from expression (13) and simplifying, the net advantage (disadvantage, if negative) of making an HSA rather than a non-HSA investment is

$$[C_1 (1 + R)^n (1 - t_n)] - [C_1 (1 - t_1) (1 + r)^n] \quad (15)$$

Note that expression (15) is identical to expression (11). That is, the effect on the year n after-tax accumulation of making an HSA investment versus a non-HSA investment is the same regardless of the manner in which the payment-source decision is made. Although the investment decision was analyzed by taking into account the subsequent payment-source decision, it turns out that the investment decision can be made independently of the payment-source decision. Table 1 summarizes the results of the decision framework.

TABLE 1

Summary of Model Results

Investment Decision:

$$\text{If } t_n < 1 - (1 - t_1) \left(\frac{1 + r}{1 + R} \right)^n$$

then invest funds in an HSA.

Otherwise, invest funds in a non-HSA (outside investment).

Payment-Source Decision:

$$\text{If } t_n < 1 - (1 - TB_i) \left(\frac{1 + r}{1 + R} \right)^{n-i}$$

then use non-HSA funds to pay for year i qualified medical expenses.

Otherwise, use HSA funds to pay for year i qualified medical expenses.

Notation:

- n = number of years in investment horizon (year in which HSA and non-HSA investments will be liquidated).
- t_n = year n (liquidation year) marginal tax rate.
- t_1 = year 1 (investment year) marginal tax rate.
- R = before-tax return on HSA investments.
- r = after-tax return on non-HSA investments.
- i = year in which qualified medical expenses are paid.
- TB_i = tax benefits from paying year i qualified medical expenses from non-HSA funds, as a percentage of the expenses.

Numerical Examples

In the examples below, assume the before-tax rate of return on HSA investments (R) is 10%, the after-tax rate of return on non-HSA investments (r) is 7.5%, the marginal tax rate at the end of the investment horizon (t_n) is 25%, the 10% penalty will not apply in year n (e.g., the taxpayer will be at least 65 years old at that time), and each year's qualified medical expenses (M_i) are \$5,500.

Example 1: Payment-Source Decision

Assume also that there are 12 years remaining in the taxpayer's investment horizon ($n - i$) and that the current-year tax benefits from paying qualified medical expenses from non-HSA funds are zero (TB_i). If the taxpayer were to pay the \$5,500 of expenses from non-HSA funds, \$5,500 of non-HSA investments would have to be sold, and these investments would have grown to \$13,100 over the 12 years remaining in the investment horizon [$\$5,500 \times (1.075)^{12}$]. The taxpayer's year n after-tax accumulation is reduced by \$13,100 as a result of using non-HSA funds to pay for the expenses.

If the taxpayer instead were to pay the \$5,500 of qualified medical expenses from HSA funds, the taxpayer would have to sell \$5,500 of HSA investments. These investments would have grown to \$17,261 when the HSA is liquidated [$\$5,500 \times (1.10)^{12}$], and the taxpayer would have to pay a \$4,315 tax at that time ($\$17,261 \times 25\%$). The taxpayer's after-tax accumulation at the end of the investment horizon is reduced by \$12,946 ($\$17,261 - \$4,315$). This \$12,946 loss of after-tax wealth is slightly less than that when non-HSA funds are used, so it is slightly better to pay the qualified medical expenses from HSA funds. The ratio of $1 + r$ to $1 + R$ is 0.9773 ($1.075 \div 1.10$). Visual inspection of Figure 2 shows that the break-even line for $n - i = 12$ at 0.9773 is very close to the 25% value for t_n .

The same decision can be obtained by applying expression (4). The right-hand-side of the expression yields a 0.2411 break-even t_n [$1 - (1 - 0)(1.075 \div 1.10)^{12}$], which indicates that using non-HSA funds will be advantageous if the liquidation-year tax rate is less than 24.11%. The actual liquidation-year tax rate is 25%, so using HSA funds is better.

Example 2: Payment-Source Decision

Assume the same facts as in Example 1, except that

the current-year tax benefit from using non-HSA funds to pay for qualified medical expenses is 5% of the expenses (rather than zero).¹⁹ If the taxpayer were to pay the \$5,500 of expenses from non-HSA funds, there would be \$275 of tax savings ($\$5,500 \times 5\%$) and \$5,225 of non-HSA investments would have to be sold ($\$5,500 - \275). These investments would have grown to \$12,445 over the next 12 years [$\$5,225 \times (1.075)^{12}$]. If the taxpayer were to pay the medical expenses from HSA funds, no current-year tax savings would result, so the reduction of after-tax wealth would be the same \$12,946 as in Example 1. This loss of wealth is more than the \$12,445 loss of wealth that would occur if non-HSA funds were used, so it would be better to use non-HSA funds to pay for the medical expenses. Alternatively, calculating the right-hand side of expression (4) indicates that the break-even t_n is 27.90% [$1 - (1 - .05)(1.075 \div 1.10)^{12}$]. The actual t_n of 25% is less than the break-even point, so using non-HSA funds is advantageous. Figure 2 is not applicable to Example 2 because Figure 2 assumes a zero TB; Example 2 assumes a 5% TB.

Example 3: Payment-Source Decision

Assume the same facts as in Example 2, except that there are only 8 years remaining in the investment horizon (rather than 12 years). The reduction in after-tax wealth if non-HSA funds are used to pay for the qualified medical expenses is \$9,319 [$\$5,225 \times (1.075)^8$]. If HSA funds are used, the HSA balance upon liquidation in 8 years would be \$11,790 smaller [$\$5,500 \times (1.10)^8$], and there would be an \$8,842 reduction in after-tax wealth [$\$11,790 - (\$11,790 \times 25\%)$]. Using HSA funds would now be advantageous, which is consistent with the HSA being a less attractive investment vehicle when the investment horizon is shorter.

Example 4: Investment Decision

Continue to assume that the before-tax rate of return on HSA investments is 10%, the after-tax rate of return on non-HSA investments is 7.5%, and the marginal tax rate at the end of the investment horizon (t_n) is 25%. Assume also the taxpayer's investment horizon is 15 years (n), the taxpayer has \$5,000 of pretax income to invest (C_t), and the current-year marginal tax rate is 30% (t_1). Since the investment decision can be made independently of the payment-source decision, the timing of any qualified med-

ical expenses is not relevant. The analysis instead focuses on the after-tax growth of the investment from the time of contribution to the end of the investment horizon.

If the \$5,000 is contributed to an HSA, it will grow to \$20,886 by the end of the 15-year investment horizon [$\$5,000 \times (1.10)^{15}$]. A \$5,222 tax will be paid at that time ($\$20,886 \times 25\%$), leaving \$15,664 after taxes ($\$20,886 - \$5,222$). If the taxpayer chooses to invest outside of an HSA, the \$5,000 of pretax income will be subject to tax, so there will be only \$3,500 available to so invest [$\$5,000 - (\$5,000 \times 30\%)$]. This \$3,500 will grow at the after-tax rate of return to \$10,356 over 15 years [$\$3,500 \times (1.075)^{15}$]. The taxpayer would be much better off investing through an HSA than outside of an HSA.

Applying expression (12) confirms this decision. The break-even t_n is 50.42% [$1 - (1 - .30)(1.075 \div 1.10)^{15}$]. The actual t_n of 25% is less than 50.42%, indicating that investing through an HSA is better. Recall from the discussion of Figure 3 that an HSA will be advantageous if the liquidation-year tax rate is less than or equal to the current-year tax rate, and this example is such a circumstance. Applying Figure 3, the ratio of $1 + r$ to $1 + R$ is 0.9773 ($1.075 \div 1.10$). The break-even line for $n = 15$ and $t_1 = 30\%$ at 0.9773 is approximately 50%, which is much higher than the expected t_n of 25%.

Example 5: Investment Decision

Assume the same facts as in Example 4 except that the current-year tax rate is 5%. A tax rate this low is highly unlikely and illustrates the extreme circumstances that are sometimes necessary to make an HSA disadvantageous. The right-hand side of expression (12) yields a 32.71% break-even t_n [$1 - (1 - .05)(1.075 \div 1.10)^{15}$], which is still more than the 25% actual t_n . This result shows that a very large increase in the tax rate may be necessary for a non-HSA investment to outperform an HSA investment on an after-tax basis. However, if the 10% early withdrawal penalty applied at liquidation, the non-HSA investment would instead be better; t_n would effectively be 35% (25% tax rate plus 10% penalty), which is more than the 32.71% break-even t_n .

Other Considerations

This article presents HSA decision models that take into account important considerations but do not take

into account all relevant considerations in order to simplify the models. This section discusses some other factors one should consider when making choices regarding an HSA, such as multiperiod decisions, liquidity, and whether the account will be used as an alternate retirement account.

When deciding whether to contribute to an HSA account, an individual should consider the period at which the money will be taken out (tax-free distribution for medical expenses, or taxable income at the end of the investment horizon). The decision is a multiperiod choice that depends not only on the current year advantage, but also on the benefit in future years. The decision models assume certainty about the values of all of the parameters. In reality, all of them are uncertain to some extent, especially the magnitude of future medical expenses. The GAO reports that 45% of taxpayers reporting an HSA contribution also withdrew funds during the year.²⁰ This statistic suggests that over half of HSA participants either did not need to use their HSA funds for medical expenses or chose to use those funds at a later time.

An HSA can be used for purposes other than medical expenses, such as an alternate retirement savings. A possible scenario could exist where the investment decision favors investing in HSA funds but the payment-source decision favors using non-HSA funds to pay for medical expenses. This situation results in having a taxpayer use current funds to pay for medical expenses and allowing the HSA funds to grow for later use. Some may ask why one would bother keeping the account if the taxpayer does not plan on using the funds to pay for medical expenses. This result occurs because the tax benefits of HSAs are structured such that many taxpayers could find it beneficial to use HSAs to accumulate funds for retirement. Due to income limitations, some taxpayers are unable to invest in an IRA account. An HSA represents an additional vehicle for retirement saving.

Another long-term benefit of HSAs is that they may be attractive as a savings account for medical expenses during retirement. Once taxpayers are enrolled in Medicare, they are no longer eligible to contribute to an HSA, but they can still use existing HSA funds to pay for medical expenses. Since the payment-source decision is more likely to favor using HSA funds to pay for medical expenses as the investment horizon grows shorter, it may be advantageous to use an HSA to accumulate funds for retirement medical

expenses. Given the low savings rate among the baby boomer generation currently reaching retirement age, this may be an added benefit of having an HSA.

Liquidity is a known problem among many taxpayers, so it might be beneficial to set aside funds in an HSA, which the taxpayer might perceive as being less available for general consumption. This might not be the best strategy from the perspective of the decision models, but forced savings in an HSA through an employer could give the taxpayer money for medical expenses that they otherwise would not have. Having the HSA funds could play a major role in obtaining necessary medical care.

Conclusion

This paper presents decision models to help taxpayers better use HSAs. First, the analysis focuses on the choice of paying for medical expenses from HSA funds or funds outside of an HSA. Second, the analysis examines the decision to invest funds in an HSA or a non-HSA investment vehicle. The results show that during longer investment horizons, higher current tax rates, lower future tax rates, lower after-tax returns on non-HSA investments relative to before-tax rates of return on HSA investments, and lower current tax benefits from deducting medical expenses, it will tend to be advantageous to put or keep funds in an HSA. This means that, in these circumstances, it will tend to be advantageous to invest funds in an HSA rather than outside of an HSA and to pay for qualified medical expenses from non-HSA funds instead of HSA funds. The HSA creates an additional option for long-term investing, regardless of future use of the fund. However, even though it is preferred as a long-term investment, the HSA account does present a short-term solution for those individuals with low or no liquid assets who have a current need to pay for medical expenses.

The decision models suggest that many taxpayers will find it advantageous to invest funds in an HSA, even if the funds will not be used to pay for medical expenses. However, the models also suggest that many taxpayers will find it advantageous to use their HSA funds to pay for medical expenses, but not until later in their investment horizons (e.g., retirement). That is, it may be beneficial for an individual to use non-HSA funds to pay for current medical expenses and save the HSA funds to pay for medical expenses later on, when

higher medical costs are more likely and nonsupplemental Medicare premiums are being paid.

The analysis in this paper presents a framework and examples that financial professionals may find useful in making decisions about their clients' HSAs. The models include assumptions that are reasonable for many clients, but they do not consider all relevant factors. One should use the models appropriately, being mindful of their strengths and limitations, and use them in conjunction with a deeper analysis of all of the relevant factors to best serve the client. ■

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(1) Congress imbued HSAs with tax-preferred treatment, in part, to encourage their use so that they would be widely adopted, with the hope that such adoption would help to mitigate growth in health care costs by shifting many medical expenditure decisions to consumers of medical care; see Andi Atwater, "Education Is Crucial to Success of HSAs," *The Wichita Eagle* (May 20, 2007): 1C.

(2) U.S. Government Accountability Office, "Health Savings Accounts, Early Enrollee Experiences with Accounts and Eligible Health Plans," *GAO-06-1133T* (September 26, 2006).

(3) AHIP Center for Policy and Research, "January 2007 Census Shows 4.5 Million People Covered by HSA/High Deductible Health Plans" (April 2007); <http://www.ahipresearch.org>. The number of HSAs that have been established could be less than the number of HDHPs that are HSA compatible since some taxpayers who are covered by a HDHP do not establish an HSA.

(4) AHIP Center for Policy and Research, "HSAs and Account-Based Health Plans" (June 2006); <http://www.ahipresearch.org>.

(5) U.S. Treasury Department, *All About HSAs* (May 18, 2007): 33; <http://www.treas.gov/offices/public-affairs/hsa/>.

(6) These generalizations are meant to provide a sense of the circumstances in which contributing to an HSA and using non-HSA funds to pay for medical expenses are advantageous. The use of the terms "higher" and "lower" in these generalizations is in reference to the parameters used in the model.

(7) IRS Publ. No. 969, *Health Savings Accounts and Other Tax-Favored Health Plans*. This article focuses on the federal tax treatment of HSAs. HSAs' state tax

treatment varies, but many states' tax laws closely conform with federal tax laws. (8) Such employer contributions to the HSA could include employee contributions made through a salary reduction agreement under an IRC Sec. 125 cafeteria plan.

(9) IRS Publ. No. 15-B, *Employer's Tax Guide to Fringe Benefits*.

(10) IRS Publ. No. 969, *Health Savings Accounts and Other Tax-Favored Health Plans*.

(11) U.S. Treasury Department, *All about HSAs*.

(12) Rev-Proc 2007-36. These numbers are adjusted annually for inflation. Amounts paid for HDHP premiums are not considered to be out-of-pocket expenses for this purpose.

(13) Rev-Proc 2007-36. These numbers are adjusted annually for inflation.

(14) Rev-Proc 2007-36.

(15) The catch-up contribution amount is scheduled to increase to \$1,000 in 2009.

(16) The analysis is intended to provide financial professionals with insights for more effective planning with respect to HSAs rather than the most accurate and complete mathematical modeling of HSAs, so several simplifying assumptions are made. The analysis assumes that each year's investment is made at the beginning of the year and that each year's qualified medical expenses are paid at the end of the year. It also implicitly assumes that the amount of qualified medical expenses is not affected by the investment and payment-source decisions. In addition, the analysis ignores the complexities that arise from the multiperiod nature of the decision context. For example, using HSA funds to pay for qualified medical expenses in a particular year means that those funds will not be available to pay for subsequent years' qualified medical expenses, and this nuance is not taken into account.

(17) There are many types of non-HSA investment opportunities, so r is not modeled in more detail to avoid making the analysis more complicated. For further discussion of the annualized after-tax rate of return, see chapter 18 of Thomas R. Pope, Kenneth E. Anderson, and John L. Kramer, *Prentice Hall's Federal Taxation 2008: Individuals* (Upper Saddle River, NJ: Pearson Education, Inc., 2008).

(18) It is possible that the net advantage of paying medical expenses from non-HSA funds decreases as the number of years remaining in the investment horizon increases (i.e., the first derivative of expression (3) with respect to $n - i$ could be positive or negative). However, the circumstances in which this outcome occurs are unlikely, and the break-even t_0 clearly increases as $n - i$ increases (i.e., the first derivative with respect to expression (4) is positive).

(19) If the taxpayer had \$5,500 of qualified medical expenses, \$58,667 of adjusted gross income, and a 25% marginal tax rate, \$1,100 of the medical expenses would be deductible [$\$5,500 - (7.5\% \times \$58,667)$]. This \$1,100 deduction would reduce taxes by \$275 ($\$1,100 \times 25\%$), which is 5% of the expenses ($\$275 \div \$5,500$).

(20) *Health Savings Accounts, Early Enrollee Experiences with Accounts and Eligible Health Plans*, statement of John E. Dicken, Director, Health Care, GAO Testimony before the Subcommittee on Health Care, Committee on Finance, U.S. Senate (September 26, 2006).

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