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# **A Primer on EVA for Healthcare Providers**

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A Primer on EVA for Healthcare Providers

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The concept of economic profit (EVA<sup>1</sup>) has proved successful in the field of corporate finance since its adoption by several U.S. and International companies over the past 25 years. Unlike accounting earnings, EVA is a measure of a company's true earnings because it fully "accounts" for the costs of all forms of financing, including debt *and* equity. In the EVA view, a company is not truly profitable unless it earns a return on capital that bests the opportunity cost of capital. That being said, the question that we address here is how to measure the economic profit of providers in the healthcare sector, which is largely comprised of Not-for-Profit organizations such as clinics, laboratories, and hospitals.<sup>2</sup>

We'll begin the EVA journey for healthcare providers by abstracting from the myriad of accounting adjustments that can be made to estimate EVA and instead look at how to estimate "basic" economic profit in both For Profit (the traditional realm for EVA application) and Not-for-Profit settings. The financial goal here is twofold: (1) to illustrate the key ingredients of economic profit for healthcare providers without getting tangled up in a web of accounting adjustments and, (2) to illustrate the advantage of using economic profit over traditional accounting profit measures such as operating margins and net income.

We'll then discuss the concept of "disclosed" EVA for healthcare providers, which reflects income statement and balance sheet effects of several value-based accounting adjustments to economic profit. These EVA accounting adjustments include the traditional ones identified by Stewart<sup>3</sup>; such as the EVA treatment of research and development expenditures, inventory costing (LIFO/FIFO), lease expense, restructuring costs, and conversion from reported income taxes to cash operating taxes (For-Profit companies).

In turn, we'll examine unique EVA accounting adjustments for healthcare providers (applicable to both For-Profit and Not-for-Profit healthcare organizations). These include (1)

income statement adjustments for changes in net charity care (net uncompensated care) expenditures<sup>4</sup>, medical training costs, and community wellness and prevention program costs, and (2) the corresponding EVA balance sheet adjustments which reflect the capitalization of provider-based intangibles as equity equivalents, particularly “net asset” or “fund equity” equivalents in the case of Not-for-Profit healthcare providers.<sup>5</sup>

## BASIC EVA

### For-Profit Provider

We’ll begin by estimating EVA in the traditional For-Profit setting. We can then make tax-related adjustments to this framework that would apply to the predominance of healthcare providers in the Not-for-Profit sector of the economy. In this context, there are two basic ingredients to estimating EVA—namely, NOPAT, which stands for net operating profit after tax, and \$WACC, which is the dollar cost of invested capital. We’ll start with NOPAT.

In the absence of EVA accounting adjustments, a For-Profit provider’s net operating profit after tax can be expressed in terms of its tax-adjusted earnings before interest and taxes, EBIT, according to:<sup>6</sup>

$$\begin{aligned}\text{NOPAT} &= \text{EBIT} - \text{Cash Taxes} \\ &= \text{EBIT} \times (1-t) \\ &= [\text{R} - \text{COMS} - \text{SG\&A} - \text{D}] \times (1-t)\end{aligned}$$

In this expression,  $\text{EBIT} \times (1-t)$  is the provider’s NOPAT. This EVA term is a reflection of the provider’s earnings before interest and taxes, EBIT, less its *unlevered* business taxes.<sup>7</sup> Likewise,

the terms, R, COMS, and SG&A in the NOPAT formulation refer to the provider's Net Revenue, Cost of Medical Services, and Selling, General and Administrative Expenses, respectively. In principle, the depreciation term, D, should be a charge that reflects the *economic* obsolescence of the provider's assets. In turn, the dollar cost of capital, \$WACC, can be expressed as:

$$\text{\$WACC} = \text{WACC} \times C$$

In this expression, WACC is the weighted-average cost of debt *and* equity capital (expressed as a required rate in decimal form), and C is the provider's net operating capital. In turn, the weighted average capital cost, WACC, is given by:

$$\begin{aligned} \text{WACC} &= \text{After-tax Debt Cost} \times \text{Debt Weight} \\ &+ \text{Equity Cost} \times \text{Equity Weight} \end{aligned}$$

Taken together, these developments show that a For Profit provider's EVA can be expressed in *basic* terms as:

$$\begin{aligned} \text{EVA} &= \text{NOPAT} - \text{\$WACC} \\ &= \text{EBIT} \times (1-t) - \text{WACC} \times C \\ &= [\text{R} - \text{COMS} - \text{SG\&A} - \text{D}] \times (1-t) - \text{WACC} \times C \end{aligned}$$

The basic EVA formula shows that a For Profit provider's economic profit is equal to its net operating profit after tax less the dollar cost of all capital employed within the organization.

In the next section, we'll look at a simple income statement and balance sheet for a hypothetical For-Profit provider to illustrate how to measure basic EVA. We'll then look at the adjustments to basic EVA that need to be made in the Not-for-Profit setting. Along the way, we'll discuss the ways to increase EVA to improve organization efficiency and to enhance organizational value. We'll conclude our EVA journey by explaining the concept of "disclosed" EVA, which reflects both traditional and unique accounting adjustments that apply in both For Profit and Not-for-Profit healthcare settings.

### **"OK-HEALTH" Provider**

We'll now illustrate how to measure basic EVA for a For-Profit provider called "OK Health." The goal here is to see if OK Health is in fact "okay" from an economic profit perspective.<sup>8</sup> We'll then explain the tax adjustments to basic EVA that are necessary if instead OK Health were a Not-for-Profit clinic, hospital, or laboratory. To begin, Exhibits 1 and 2 show the income statement and balance sheet respectively for OK Health at a point in time.

When viewing OK Health's financial statements from an accounting perspective, it appears that it is a profitable healthcare provider. Based on the income statement shown in Exhibit 1, OK Health reports a positive gross margin, at 31.2% (39,000/125,000), and a positive operating margin, at 13.6% (17,000/125,000).<sup>9</sup> As a For Profit provider, OK Health's net income and operating earnings per share are also positive, at \$8,213 and \$1.31, respectively. In turn, with Stockholder's Equity at \$96,600 its return on equity (ROE) seems favorable, at 8.5% (8,213/96,600 x 100). Moreover, based on the "Dupont formula," the provider's ROE results from multiplying its return on assets, ROA at 5.4%, by the equity multiplier (Assets/Equity) of 1.57.<sup>10</sup>

## OK Health's Economic Profit

To see if OK Health is truly a profitable healthcare provider—that is, a value creator in financial terms—we'll first calculate the provider's net operating profit after tax, NOPAT. Upon substituting the provider's Net Revenue, Cost of Medical Services, Selling General and Administrative, and tax rate figures into the NOPAT formulation, we obtain:<sup>11</sup>

$$\begin{aligned}\text{NOPAT} &= [\text{R}-\text{COMS}-\text{SG\&A}] \times (1-t) \\ &= [125,000-86,000-22,000] \times (1-0.4) \\ &= 17,000 \times 0.6 = \$10,200\end{aligned}$$

In order to measure OK Health's *dollar* cost of capital, the manager needs to know something about (1) the after-tax cost of debt, (2) the cost of equity capital, and (3) the “target” debt weight, *if any*, in the capital structure, and (4) the dollar amount of capital employed in its healthcare organization.<sup>12</sup> With respect to the first requirement, OK Health's after-tax cost of debt can be estimated according to:

$$\begin{aligned}\text{After-tax Debt Cost} &= \text{Pre-tax Debt Cost} \times (1-t) \\ &= 0.08 \times (1-0.4) \\ &= 0.048 \text{ or } 4.8\%\end{aligned}$$

In this expression, the pre-tax debt cost, at 8%, is taken as the provider's average coupon rate on the balance sheet (for simplicity, we assume that the provider's bonds are trading at par value). OK Health's pre-tax borrowing cost of 8% can also be obtained by dividing the provider's



interest expense, \$3,312 (income statement), by the face value of its long term debt, at \$41,400 (balance sheet).

In turn, we'll use the Capital Asset Pricing Model to estimate OK Health's cost of equity.<sup>13</sup> With a risk-free interest rate of 6.5%, a market-driven equity risk premium of 6%, and a common stock beta of 1.0, the provider's (CAPM-based) cost of equity capital becomes:<sup>14</sup>

$$\begin{aligned}\text{CAPM} &= R_f + \text{MRP} \times \text{Beta} \\ &= 0.065 + 0.06 \times 1.0 \\ &= 0.125 \text{ or } 12.5\%\end{aligned}$$

Moreover, if we assume that OK Health's "target" debt-to-capital ratio is 30%, the provider's overall cost of capital can be measured according to:

$$\begin{aligned}\text{WACC} &= \text{After-tax Debt Cost} \times \text{Debt Weight} \\ &\quad + \text{Equity Cost} \times \text{Equity Weight} \\ &= 0.048 \times (0.3) + 0.125 \times (0.7) \\ &= 0.102 \text{ or } 10.2\%\end{aligned}$$

### **Repackaging the Balance Sheet**

With knowledge of OK Health's operating capital it is possible to calculate the dollar cost of capital, \$WACC. In this context, it is helpful to recognize that the provider's balance sheet can be "repackaged" in a way that shows the equivalency of its operating and financing capital.

Exhibit 3 illustrates this result.

Exhibit 3 shows that OK Health's operating *and* financing capital is \$138,000. The operating capital (left hand side of balance sheet) is equal to net working capital (excluding debt-related short term accounts) *plus* net plant, property and equipment (as well as other operating assets). Likewise, in the absence of EVA accounting adjustments, the financing capital is just long-term debt (including short-term debt accounts, minority interest, and capitalized lease obligations, if any) *plus* stockholders' equity (including both preferred and common equity). Hence, the provider's overall dollar-cost of capital can be measured by applying the weighted average cost of capital, at 10.2%, to either the provider's tangible operating capital or its equivalent financing sources of capital. Whatever side of the EVA balance sheet is chosen, OK Health's *dollar* cost of capital is \$14,076:

$$\begin{aligned}\$WACC &= WACC \times C \\ &= 0.102 \times 138,000 \\ &= \$14,076\end{aligned}$$

More importantly, since OK Health's dollar cost of financing, \$WACC, is higher than its net operating profit after tax, NOPAT, the healthcare provider has *negative* economic profit:

$$\begin{aligned}EVA &= NOPAT - \$WACC \\ &= 10,200 - 14,076 \\ &= -\$3,876\end{aligned}$$

Thus, while OK Health *looks* like a profitable healthcare producer from a traditional accounting perspective, the EVA insight reveals that the provider is a (potential<sup>15</sup>) value destroyer. This

happens because its operating profitability is not sufficient enough to cover the overall dollar cost of capital.

### **OK Health's Residual Return on Capital**

We can also show that OK Health has negative EVA because its underlying “residual (or surplus) return on capital”, RROC, is negative. This value wasting situation occurs when a provider's after-tax return on capital, ROC, falls short of the weighted average capital cost, WACC. To illustrate this, simply define RROC as the provider's EVA-to-Capital ratio. At -2.8%, one sees that OK Health's adverse *surplus* return on capital is caused by its negative economic profit:

$$\begin{aligned} \text{RROC} &= \text{EVA/Capital} \\ &= -3,876/138,000 \\ &= -0.028 \text{ or } -2.8\% \end{aligned}$$

Likewise, since EVA can be expressed as the provider's initial capital, C, times the residual return on capital, RROC, the same result is obtained by focusing on the *spread* between the after-tax return on capital, ROC, and the weighted average cost of debt and equity capital, WACC:<sup>16</sup>

$$\begin{aligned} \text{RROC} &= \text{EVA/C} \\ &= [\text{ROC} - \text{WACC}] \\ &= [0.074 - 0.102] = -0.028 \\ &= -0.028 \text{ or } -2.8\% \end{aligned}$$

In this expression, ROC, at 7.4%, results from dividing NOPAT, \$10,200, by the provider's capital, \$138,000. The WACC is the familiar cost of capital percentage of 10.2%.

### **OK Health's Interest Tax Subsidy**

When looking at OK Health as a For Profit provider, it is important to use its net operating profit after tax, NOPAT in the first step of the EVA calculation. This is because the dollar cost of capital (step two of the EVA calculation) already reflects the interest tax subsidy received on the provider's outstanding debt obligations. By double counting this debt-induced tax subsidy, the manager or analyst would not only overestimate the provider's operating profit, but he or she would also impart a positive bias in the provider's organizational value (enterprise value in the traditional for-profit realm of corporate valuation).

To show the source of bias, it is helpful to note that the "levered" provider's net operating profit after tax, LNOPAT, can be expressed in terms of the equivalent risk "unlevered" provider's net operating profit, NOPAT, *plus* a yearly interest tax subsidy. Looking at OK Health in this levered (with debt) and unlevered (without debt) context yields:

$$\begin{aligned} \text{LNOPAT} &= \text{NOPAT} + t \times \text{Interest} \\ &= \$10,200 + 0.4 \times \$3,312 \\ &= \$10,200 + \$1,325 \\ &= \$11,525 \end{aligned}$$

In this expression,  $t \times \text{Interest}$  (at \$1,325), is the yearly interest tax subsidy that OK Health receives as a For-Profit levered provider, as opposed to a For-Profit debt-free provider. However, this *same* interest tax benefit is already reflected in the provider's dollar cost capital cost through the reduced cost of corporate debt financing.

To show this, recall that OK Health's after tax cost of debt was previously expressed as:

$$\begin{aligned}\text{After-tax debt cost} &= \text{Pre-tax debt cost} \times (1-t) \\ &= 0.08 \times (1-0.4) \\ &= 0.048 \text{ or } 4.8\%\end{aligned}$$

In this formulation, the provider's pre-tax cost of debt, 8%, is reduced by 320 basis points due to the tax benefit that OK Health receives from deductibility of its debt interest expense. Expressing this leverage-induced reduction in the For-Profit provider's dollar cost of capital yields the same yearly interest tax benefit that is already reflected in the provider's levered operating profit:

$$\begin{aligned}\$WACC \text{ Tax Subsidy} &= t \times [\text{Pre-tax Debt Cost}] \times \text{Debt} \\ &= 0.4 \times [3,312/41,400] \times 41,400 \\ &= \$1,325\end{aligned}$$

To avoid positive bias, OK Health's economic profit must be calculated by *first* estimating what its net operating profit after tax, NOPAT, would be as an equivalent risk unlevered provider--namely, an "OK Health like" provider with no debt--and *then* subtracting the overall dollar cost of debt and equity capital from this unlevered NOPAT figure.

## BASIC EVA

### Not-for-Profit Provider

There are several issues that arise when measuring EVA in a Not-for-Profit setting. The first is obvious: NOPAT and  $\$WACC$  must be stated on a pre-tax basis, which we'll address shortly. A second and more fundamental issue arises in the interpretation of the pre-tax cost of debt *and* the cost of equity for Not-for-Profit providers. With respect to debt financing, the pre-tax cost of debt should be interpreted as the yield to maturity on an equivalent-risk, tax-exempt bond issued by a local, regional, or state healthcare authority.

In the case of equity financing, we can interpret this cost as a cost of "fund" equity.<sup>17</sup> With that view, the opportunity cost of equity for a Not-for-Profit provider equals the "grossed up" equity cost of a For-Profit provider. This is due to the fact that CAPM (one measure of equity cost) is an after-tax rate and Not-for-Profits do not pay taxes (typically) on operating income. In principle, the pre-tax CAPM can be interpreted as a cost of fund equity because the perceived benefits from donor contributions (fund equity) can be viewed in financial terms as being worth what a charitable giver or donor could have earn on a similar risk portfolio of investment securities. The same opportunity cost concept applies in the case of retained earnings by Not-For-Profit organizations; as equity capital in For Profit and Not-for-Profit settings is *not* "free capital". Also, another issue that arises when measuring EVA for Not-for-Profits involves "equity equivalents". We'll address unique equity equivalents for providers-such as the capitalized values of charity care (net), medical training costs, and community wellness and prevention programs costs-at a later point.

There are of course tax adjustments to NOPAT and  $\$WACC$  that must be made when estimating EVA in the Not-for-Profit setting. If, for example, we measure OK Health's EVA on

a pretax basis--because (1) the healthcare manager wants to make a comparison of operating performance with a Not-for-Profit provider, or (2) because OK Health is actually a Not-for-Profit provider--then we need to estimate EVA components (NOPAT and \$WACC) on a pre-tax basis. In this context, the healthcare provider's net operating profit *before* taxes, NOPBT, would be used in conjunction with a *pre-tax* dollar cost of capital.

To see how this works, we can express OK Health's net operating profit before tax as:

$$\begin{aligned}\text{NOPBT} &= \text{NOPAT}/(1-t) \\ &= \text{EBIT} \times (1-t)/(1-t) \\ &= \text{EBIT} = \$17,000\end{aligned}$$

In turn, the provider's weighted average cost of capital must be expressed on a pre-tax basis. The only complication here is that the after-tax cost of equity needs to be "grossed up" by one *minus* the (marginal) corporate tax rate to convert it to a pre-tax fund-equity rate.

$$\begin{aligned}\text{Pre-tax WACC} &= \text{Debt Weight} \times \text{Pre-tax Debt Cost} \\ &\quad + \text{Equity Weight} \times \text{Pre-tax Equity Cost} \\ &= 0.3 \times [0.048/(1-0.4)] + 0.7 \times [0.125/(1-0.4)] \\ &= 0.3 \times 0.08 + 0.7 \times 0.208 \\ &= 0.17 \text{ or } 17\%\end{aligned}$$

In this context, OK Health's *pre-tax* cost of debt is 8% (same as coupon rate assuming that bonds are trading at par), its pre-tax cost of equity (fund equity) is 20.8%, and its pre-tax cost of capital is 17%. With this development, the healthcare provider's *pre-tax* EVA is:

$$\begin{aligned}\text{Pre-tax EVA} &= \text{Pre-tax NOPAT} - \text{Pre-tax } \$\text{WACC} \\ &= \text{EBIT} - \text{Pretax WACC} \times C \\ &= \$17,000 - 0.17 \times \$138,000 \\ &= \$17,000 - \$23,460 \\ &= -\$6,460\end{aligned}$$

Not surprisingly, OK Health's pre-tax EVA is equal to its after-tax EVA grossed up by one *minus* the corporate tax rate, *t*:

$$\begin{aligned}\text{Pretax EVA} &= \text{After Tax EVA}/(1-t) \\ &= -\$3,876/(1-0.4) \\ &= -\$6,460\end{aligned}$$

### **Role of Capital Efficiency**

It is well known that capital efficiency is essential for creating value within any organization.

EVA emphasizes capital efficiency through improved working capital management (for example, a “just-in-time” inventory system) and/or better utilization of assets including medical facilities and technology. To see this, we can express the return on capital as a NOPAT margin *times* a capital turnover ratio:



$$\begin{aligned}
 \text{ROC} &= \text{NOPAT}/\text{C} \\
 &= \text{NOPAT}/\text{R} \times \text{R}/\text{C} \\
 &= \text{NOPAT}/\text{R} \times \text{R}/(\text{NWC} + \text{NPPE})
 \end{aligned}$$

Clearly, anything a manager can do to increase a provider's net operating margin (NOPAT/Net Revenue) will lead to a higher return on capital. Other things the same, anything a manager can do to earn more revenue for a given amount of capital--or use less capital (net working capital and net plant property and equipment) for a given amount of revenue—will produce a higher return on capital. Upon substituting the appropriate ROC figures for OK Health as a Not-for-Profit provider we obtain:

$$\begin{aligned}
 \text{Pre-tax ROC} &= \text{EBIT}/\text{R} \times \text{R}/\text{C} \\
 &= \$17,000/\$125,000 \times \$125,000/\$138,000 \\
 &= 0.136 \times 0.91 \\
 &= 0.123 \text{ or } 12.3\%
 \end{aligned}$$

Thus, better capital turns  $[1/(\text{NWC} + \text{NPPE})]$  at OK Health are needed because its pre-tax cost of capital, at 17%, is higher than its pre-tax return on capital. In its status quo position, we see that OK Health is hardly “OK” from an EVA perspective, even though its return on capital, at 12.3% is positive and seems attractive from a more traditional accounting perspective.

## Accounting versus EVA

### Break Even Point

We can also distinguish between the breakeven numbers of patients (units) that a provider would need to produce a *zero* accounting profit *versus* a value-based measure of breakeven, namely, *zero* economic profit. Specifically, the traditional accounting breakeven point for a provider is given by:

:

$$A-BEP = FC/(p-v)$$

In this expression, FC is fixed costs, which from a managerial accounting perspective includes the fixed cost components of COMS and SG&A. In turn,  $p$  refers to a composite average price charged per patient service and  $v$  is the variable cost per patient for medical services supplied. If we assume that (1) fixed costs make up 25% of COMS (\$86,000) and SG&A (\$22,000) respectively, (2) the price per unit of patient medical services is \$250.00, and (3) variable medical costs per patient service is \$150.00, then the per-period A-BEP for OK Health is:

$$\begin{aligned} A-BEP &= 0.25 \times \$108,000 / (\$250 - \$150) \\ &= \$27,000 / 100 = 270 \text{ patients} \end{aligned}$$

From an EVA perspective FC includes accounting fixed costs *plus* a fixed target dollar return. With EVA, the minimum acceptable dollar return to debt holders and fund equity contributors is \$WACC. Upon substituting OK Health's pre-tax dollar cost of capital into FC, we obtain the break even number of patients in pre-tax EVA terms:

$$\begin{aligned} \text{E-BEP} &= (\$27,000 + \$23,460) / (\$250 - \$150) \\ &= \$50,460 / 100 = 505 \text{ patients} \end{aligned}$$

Thus, a healthcare provider must supply medical services (achieved possibly through “outsourcing” medical services) to a larger network with more *payer* patients in order to breakeven in economic profit terms. This is because EVA emphasizes the importance of the cost of capital, particularly equity capital in the For-Profit setting and fund equity in a Not-for-Profit setting. In the absence of showing a breakeven number of patients in economic terms, a provider will have difficulty attracting new capital to invest in the latest medical technology advances. Worse yet, an unprofitable provider would be faced with aging facilities falling into disrepair.

### **OK Health’s Growth Opportunities**

Given that OK Health has negative EVA, it has a clear incentive to find a *positive* growth opportunity. In this context, let’s suppose that the provider discovers that it can invest \$20,000 in a new medical technology that will increase yearly patient revenue by \$40,000. In turn, suppose that OK Health’s Cost of Medical Services and Selling, General, and Administrative Expense accounts rise by \$25,000 and \$5,000 per annum, respectively. With these assumptions, the provider’s estimated annual NOPAT will go up by \$6,000<sup>18</sup>:

$$\begin{aligned} \Delta \text{NOPAT} &= \Delta[\text{R-COMS-SG\&A}] \times (1-t) \\ &= [40,000 - 25,000 - 5,000] \times (1 - 0.4) \\ &= \$6,000 \end{aligned}$$

Since OK Health's operating capital rises by \$20,000 to support the higher revenue forecast, its estimated (annual) capital costs rise by \$2,040:

$$\begin{aligned}\Delta\$WACC &= WACC \times \Delta C \\ &= 0.102 \times 20,000 \\ &= \$2,040\end{aligned}$$

Taken together, the changes in NOPAT and \$WACC reveal that OK Health's growth opportunity is a desirable investment for its owners.<sup>19</sup> With these figures, OK Health's EVA rises by \$3,960 per annum:

$$\begin{aligned}\Delta EVA &= \Delta NOPAT - \Delta\$WACC \\ &= \$6,000 - \$2,040 \\ &= \$3,960\end{aligned}$$

As a result of OK Health's medical technology opportunity, we see that the provider has moved from a value-destroyer to a value-neutral position. Among other things, this implies that the provider's revised return on capital, 10.3% (16,200/158,000), is now close to the overall cost of capital, 10.2%. Likewise, in this value neutral situation, the provider's residual return on capital, RROC, is nearly zero. Of course, with further growth opportunities, OK Health has the potential to become a value creator with *discounted* positive economic profit. Without getting into details here, one can also assess the valuation consequences of OK Health's growth

opportunities, including an estimate of its stock price as a For Profit provider or its equivalent “shadow” price as a Not-For Profit.<sup>20</sup>

## WAYS TO INCREASE EVA

We now see that EVA is helpful for healthcare providers because it gives a transparent look at key features of economic profit measurement. In this context, EVA reveals that a provider is not economically profitable until it covers its usual operating expenses and all of its financing costs—including the dollar cost of debt *and* equity (however interpreted). In this sense, EVA is superior to accounting profit measures such as operating margins and net income. Additionally, we can use basic EVA to gain insight on the financial steps that providers must take to permanently improve their economic profit outlook and, thereby, enhance enterprise value.

There are several ways that a provider can improve its economic profit outlook.<sup>21</sup>

Specifically, the basic EVA formula suggests that value conscious providers should take steps to:

- Increase net revenue (patients, or otherwise)
- Reduce operating expenses (COMS and SG&A) where prudent
- Use less capital to produce the same amount of medical services (improved asset turns)
- Use more capital to invest in *positive* growth opportunities (medical facilities, training, and community service “investments” that build brand image)
- Reduce WACC

Expanding a provider’s market share is captured by increasing net revenue in the EVA formula.

Other things the same (operating expenses and capital costs), higher revenue means higher

economic profit. Also, it should be no surprise that reducing a provider’s operating expenses via

cost cutting and/or achieving tax efficiency enhances economic profit because the COMS, SG&A and cash tax accounts go down.<sup>22</sup> However, when using cost cutting as a tool to improve the EVA outlook, providers must be cautioned that too much cost cutting, “cuts” the fabric of its future economic profit, or worse yet, the quality of its medical services.

Note that if EVA is to be taken seriously as an improvement over traditional accounting profit measures then it must do *more* than just show that increasing revenue and/or reducing operating expenses will improve a provider’s organizational value. Fortunately, this is where economic profit and accounting profit measurement depart since EVA fully “accounts” for the dollar cost of capital in terms of both the amount of capital employed and the opportunity cost of that capital.

EVA emphasizes the rationalization of capital as can be seen in the basic EVA formulation. Clearly, anything that providers can do to (1) improve inventory and net PP&E (Plant, Property and Equipment) turnover ratios from the balance sheet, and (2) reduce business uncertainty (as manifest in a decline in NOPAT volatility) will have beneficial cost of capital implications via the impact on C and WACC, respectively. Moreover, we used the basic EVA formula to show that investing more capital (rather than less capital) in positive economic profit growth opportunities is really what value creation is all about.

Also, EVA links the income statement and balance sheets with a value-based focus on net operating profit after tax and invested capital. Unlike accounting profit, EVA measures the dollar cost of capital by multiplying the amount of capital by the overall cost of capital. Hence, EVA measures profit in the classical economists’ notion of “profit” because a providers’ opportunity cost of capital is fully reflected in the profit calculation.<sup>23</sup> Since accounting profit “accounts” only for the dollar cost of debt financing, via interest expense, it completely misses the dollar

cost of equity capital. This cost of financing omission is important for providers that finance their growth opportunities with (fund) equity—particularly providers that make substantial investments in tangibles (medical facilities and technology) and intangibles (net charity care, medical training, and community wellness and prevention programs as described below) as well as providers that seek to expand their market share in a cost efficient manner.

### **DISCLOSED EVA**

Before concluding, it is important to understand the role of EVA-based accounting adjustments, with an eye toward those adjustments that are unique to healthcare providers. To begin, Bennett Stewart provides a “generally accepted” boilerplate of accounting adjustments that are necessary to estimate a company’s NOPAT and invested capital<sup>24</sup> In this context, Exhibit 4 shows traditional accounting adjustments that are used in the equivalent “bottom-up *and* top-down” approaches to estimating a company’s “disclosed” NOPAT, while Exhibit 5 shows capital adjustments employed in the “asset *and* financing” approaches to estimating disclosed capital. Additionally, the two exhibits show unique accounting adjustments used in measuring disclosed EVA for healthcare providers.

### **Disclosed NOPAT**

In the bottom-up approach to measuring disclosed NOPAT (Exhibit 4 Panel A), the provider begins with net operating profit before taxes (using For-Profit terminology). This is just operating earnings before interest and taxes (EBIT) on a provider’s income statement.<sup>25</sup> To this amount, several EVA-based accounting adjustments are made to move toward a better representation of the firm’s pre-tax cash operating profit. For examples, the increase in LIFO

reserve account is added to operating profit to adjust for the overstatement of cost of goods sold—due to overstatement of product costing--in a period of rising prices (inflation), while the increase in capitalized research and development (or change in Unamortized R&D account on EVA balance sheet) is added back to operating profit to recognize that R&D costs should be capitalized (rather than expensed in the year incurred) because they generate a *future* stream of cash flow benefits.<sup>26</sup>

Likewise, the increase in accumulated goodwill amortization (described in footnotes to financial statements) is added to operating profit to reflect that goodwill (in the EVA view) is a form of capital investment that needs to earn a cost of capital return just like expenditures on physical capital. Goodwill intangibles are particularly poignant for healthcare providers like hospitals and clinics because expenditures on “charity care” and community wellness and prevention programs are key elements to fulfilling the community service mission of both Not-for-Profit *and* For Profit providers. Also, Stewart argues that the increase in bad debt reserve should be added back to pre-tax operating profit to more accurately reflect a company’s experience default rate on consumer receivables. However, since the rise in capitalized net charity care is treated separately on the EVA income statement, the change in bad debt reserve pertains only to financially able payers that refuse to pay their healthcare obligations.

Panel A of Exhibit 4 also shows that implied interest expense on operating leases is added back to operating results to remove the capital structure effects of debt-related financing decisions. Also, the rise in reengineering and/or restructuring costs (write-offs of special items) in the typical For Profit setting is added to operating profit as well as the rise in system network development costs for multi-hospital providers or like healthcare providers; in the EVA view these expenditures are treated as capital “investments.” Moreover, in the case of For-Profit



providers (because Not-for-Profits do not usually pay taxes), cash operating taxes, rather than reported income taxes, is subtracted from pre-tax operating earnings to arrive at disclosed NOPAT. Panel B of Exhibit 4 shows the top-down approach to estimating provider disclosed EVA, which should now be self explanatory.

### **Disclosed Capital**

In the *assets approach* (Exhibit 5 Panel A) to estimating disclosed capital, the provider begins with net short term operating assets (net working capital *less* short-term debt equivalents). This reflects moneys tied up in current assets like accounts receivables and inventories as well as a normal amount of cash needed for operations.<sup>27</sup> Current liabilities such as accounts payable, accrued expenses, and income taxes payable (For-Profit provider) are netted from the short term operating asset accounts. Short-term notes payable (a current liability account) are excluded from this calculation because they represent a source of debt financing. Interest-bearing debt is reflected in the sources of financing approach (Panel B Exhibit 5) to measuring disclosed capital, while the debt-interest tax subsidy (For-Profit provider) is reflected in the calculation of a company's dollar cost of capital.

Net plant, property, and equipment and goodwill (particularly, acquisition goodwill) are then added to net short term operating assets. Special attention should be paid to unamortized medical intangibles that are unique to the mission of healthcare providers. These unique "assets" include the capitalized (unamortized) values of net charity care, medical training expenditures, and community wellness and prevention program costs that are essential to a provider's community service mission.<sup>28</sup> Several other "equity equivalents" are added to invested capital; these include LIFO Reserve, accumulated goodwill amortization, net capitalized research and

development, cumulative bad debt reserve, the cumulative write-off of special items like reengineering and restructuring costs, as well as the capitalized value of system-wide development and networking costs in multi-hospital settings. Moreover, the present value of operating leases (better dubbed leased operating assets) is added back to arrive at disclosed capital on the EVA balance sheet.

In the sources of financing approach (Exhibit 5 Panel B), the healthcare provider begins with Stockholder's Equity in the For-Profit setting or "Net Assets" in the Not-for-Profit setting. To this amount, one adds "equity equivalents" including those already listed on a provider's balance sheet—such as preferred stock, minority interest, and deferred income taxes (For-Profit setting)--as well as the companion equity equivalent accounts mentioned above in the equivalent assets approach to estimating disclosed capital—namely, traditional equity equivalents including LIFO reserve, accumulated goodwill amortization, net capitalized research and development, bad debt reserve, and the cumulative write-offs of special items; as well as the capitalized value of provider-based intangibles such as net charity care, medical training expenditures, and related goodwill.

In turn, debt and debt equivalents are then added to arrive at disclosed capital in the sources of financing approach. These debt-related accounts include those listed on the balance sheet—including interest bearing short-term debt, long-term debt, and capitalized lease obligations—and "off balance sheet" debts<sup>29</sup> such as projected operating lease rentals (typically four-to-five year projections) in terms of their present value equivalent. With recognition of several EVA-based accounting adjustments, we see that the equivalent asset *and* financing approaches to estimating disclosed capital produce a robust measure (compared with basic EVA explained earlier) of economic capital. That being said, a healthcare provider must (still)

consistently earn a return on capital that bests the opportunity cost of capital in order to be a value creator with discounted positive economic profit.

## SUMMARY

We looked at how to estimate basic economic profit for healthcare providers and we concluded with some unique EVA accounting adjustments that result in disclosed EVA; these unique accounting adjustments include the capitalized (unamortized) values of net charity care, medical training expenditures, and community wellness and prevention program costs that are key to fulfilling a provider's community service mission. We focused initially on basic EVA in order to abstract from a myriad of value-based accounting adjustments and instead look at the key features of economic profit measurement. We asserted that EVA is consistent with the economists' notion of "profit" because it measures profitability net of both the usual operating expenses of running a business (organization) *and* the opportunity cost of capital. Also, with its emphasis on operating profit less capital costs, EVA—more aptly, the discounted value thereof—is a direct measure of whether or not a healthcare provider is a value creator (discounted positive EVA) or a value destroyer.

Providers should be cautioned that EVA measurement does *not* imply that accounting profit measurement is irrelevant. Indeed, several accounting items such as Net Revenue, COMS, and SG&A are included in the estimation of a provider's NOPAT. Also, accounting profit already includes the pre-tax and after-tax interest cost on a provider's debt. However, this is where the similarities between EVA and accounting profit end since EVA links both the income statement and balance sheet in a way that fully reflects the dollar cost of all sources of financing,

particularly the dollar cost of equity in the For Profit setting and the cost of fund equity in the case of Not-For-Profit providers.

This conceptual difference in profit measurement is poignant for companies (providers or otherwise) in sectors like healthcare and (bio) technology that tend to finance their growth opportunities with equity rather than debt. For these sectors, the EVA formula can be used to show that the weighted average cost of debt and equity, WACC, is in fact the cost of equity. Surely, equity (or fund equity) capital is not a “free” source of financing for any provider as accounting profit measures such as net operating income (For-Profit *and* Not-for-Profit settings) and earnings per share (For-Profits) might mistakenly suggest.

## References

Carlson, Jr., Donald A., “Catch the Eye of the Capital Markets,” *Healthcare Financial Management Magazine* (May 2005).

Fama, Eugene F. and Kenneth R. French, “The Cross Section of Expected Stock Returns,” *Journal of Finance* (June 1992).

Gapenski, Louis C., *Understanding Healthcare Financial Management* (Chicago: Health Administration Press, 4th edition, 2003).

Grant, James L., *Foundations of Economic Value Added Second Edition* (New York: John Wiley & Sons, 2003).

Hayden, Eric, “Non-Profit Hospitals Face Structural as Well as Financial Challenges: Lessons from Massachusetts”, University of Massachusetts Boston (Working Paper 1003, March 2005).

*Health, United States* (National Center for Health Statistics, 2002).

Marshall, Alfred, *Principles of Economics Volume 1* (New York: MacMillan & Co., 1890), p. 142.

Partners HealthCare System Inc., Annual Reports ([www.partners.org](http://www.partners.org))

Peterson, Pamela, “Value-Based Measures of Performance,” Chapter 4 in *Value-Based Metrics: Foundations and Practice* (Frank J. Fabozzi and James L. Grant (eds.), New York, John Wiley & Sons, 2000).

Sharpe, William F., “Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk,” *Journal of Finance* (September 1964).

Stewart, G. Bennett III, *The Quest for Value* (New York: Harper Collins, 1991).

Tully, Shawn, “The Real Key to Creating Value,” *Fortune* (September 20, 1993).

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Exhibit 1  
OK Health Provider  
Income Statement

	Status Quo Position
Revenue	\$125,000
COMS*	<u>86,000</u>
Gross Income	\$39,000
SG&A	<u>22,000</u>
Operating Income	\$17,000
Interest Expense	3,312
Pretax Profit	<u>13,688</u>
Taxes (at 40%)	<u>5,475</u>
Net Income	\$ 8,213
Shares Outstanding	6,250
EPS	\$ 1.31

\*COMS=Cost of Medical Services

Exhibit 2

OK Health Provider

Balance Sheet

Cash	7,000	Accounts Payable	10,000
Securities	8,000	Wages Payable	2,000
Accounts Receivable	14,000	Tax Accruals	<u>2,000</u>
Inventory	<u>53,000</u>	Current Liabilities	14,000
Current Assets	82,000	( <i>non-interest bearing</i> )	
Property	4,000	Long-term Debt	<u>41,400</u>
Net Plant	15,000	(8% Coupon)	
Net Equipment	<u>51,000</u>	Common Stock at Par	625
Net Fixed Assets	70,000	(par value \$.10; 6250 shares auth./outstanding)	
		Addit. Paid in Capital	14,375
		Retained Earnings	<u>81,600</u>
		Stockholders' Equity*	<u>96,600</u>
		Liabilities and	
Total Assets	<u>152,000</u>	Stockholders Equity	<u>152,000</u>

\*As a Not-for-Profit provider, OK-Health's \$96,600 in stockholders' equity account would generally consist of three (rather non-descript) accounts: (1) Un-restricted net assets (in effect, retained earnings), (2) temporarily restricted net assets, and (3) permanently restricted net assets.

Exhibit 3

OK Health Provider

Basic Operating and Financial Capital

(Aggregate Results)

Operating Capital (basic):

Financing Capital (basic):

Net Working Capital

Current Assets 82,000

Current Liabilities (14,000)

(*non-interest bearing*) \_\_\_\_\_

68,000

Long Term Debt 41,400

Net Fixed Assets 70,000

Stockholder's Equity 96,600

Totals: 138,000

138,000



Exhibit 4: Calculation of Provider Disclosed NOPAT  
from Financial Statement Data

*Panel A. Bottom-up approach*

Begin:

Operating profit after depreciation and amortization

Add:

Implied interest expense on operating leases

*Increase in LIFO reserve*

*Increase in accumulated goodwill amortization*

*Increase in capitalized research and development*

*Increase in cumulative write-offs of special items*

*Increase in bad debt reserve (financially adequate payers)*

*Increase in capitalized net charity care*

*Increase in capitalized medical training programs*

*Increase in capitalized community wellness programs*

Equals:

Adjusted operating profit before taxes

Subtract:

Cash operating taxes

Equals:

NOPAT (disclosed)

*Panel B. Top-down approach*

Begin:

Net Sales

Subtract:

Cost of goods sold

Selling, general, and administrative expenses

Depreciation

Add:

Implied interest expense on operating leases

*Increase in equity reserve accounts (see above listing)*

Other operating income

Equals:

Adjusted operating profit before taxes

Subtract:

Cash operating taxes

Equals:

NOPAT (disclosed)

Exhibit 5: Calculation of Provider Disclosed Capital  
from Financial Statement Data

*Panel A. Assets approach*

Begin:

Net short-term operating assets\*

Add:

Net plant, property, and equipment

Other assets

Goodwill (acquisitions)

*LIFO reserve*

*Accumulated goodwill amortization*

*Capitalized research and development*

*Cumulative write-offs of special items*

*Bad-debt reserve (financially adequate payers)*

*Capitalized net charity care*

*Capitalized medical training programs*

*Capitalized community wellness programs*

Present value of operating leases

Equals:

Capital (disclosed)

*Panel B. Sources of financing approach*

Begin:

Book value of common equity

Add equity equivalents:

Preferred stock

Minority interest

Deferred income tax

*Equity reserve accounts (see above listing)*

Add debt and debt equivalents:

Interest bearing short-term debt

Current portion of long-term debt due

Long-term debt

Capitalized lease obligations

Present value of operating leases

Equals:

Capital (disclosed)

\*Net short-term operating assets = Current Assets *less* Current Liabilities (excluding debt-related short-term liabilities)

<sup>1</sup> EVA<sup>®</sup> is a registered trademark of Stern Stewart & Co. While this primer emphasizes the role of economic profit (EVA) in creating value, the methodology could be used as part of a more general “balanced scorecard” approach, with EVA analyses substituting for more traditional ways (margins, ROI, ROE) of measuring provider financial performance.

<sup>2</sup> For example, as of 2002, Not-for-Profit (and voluntary) hospitals accounted for some 61% of community hospitals in the United States. For-Profit or investor owned hospitals made up about 15% of the total while state and local government community hospitals, at 24% accounted for the balance (*Health, United States*, 2002, p. 279).

<sup>3</sup> See Stewart (1991).

<sup>4</sup> In principle, charity care costs can be viewed as an intangible asset that is central to the community service mission of healthcare providers, particularly hospitals and clinics. The phrase “net charity care” is used to recognize that this intangible arises from voluntary expenditures made by providers over-and -above required contributions to a state uncompensated care pool or those made simply to preserve the tax-exempt status of a Not-for-Profit provider. Hence, net (or excess) charity care is a truly voluntary contribution that enhances one’s brand image. Moreover, providers should distinguish between net charity care and bad debt expense, where in the latter case an individual is deemed financially able to pay, yet unwilling to do so. We’ll say more on charity care and related intangibles such as community wellness and prevention program costs at a later point.

<sup>5</sup> Unlike For-Profit providers, the concept of “equity” for a Not-for-Profit provider is rather vague. Conventional accounting uses the term “net assets” on the balance sheet of Not-for-Profit providers to represent the difference between assets and liabilities. In the For-Profit case, the difference between asset and liability accounts is the familiar Stockholders’ Equity account. Moreover, the net asset account for Not-for-Profits can be separated into three other non-descript labels: unrestricted net assets (in effect, retained earnings), temporarily restricted net assets, and permanently restricted net assets. See, for example, Partners HealthCare annual reports at [www.partners.org](http://www.partners.org).

In this EVA primer, we’ll use the term “fund equity” to represent the overall net asset account of Not-for-Profit providers. This terminology makes a connection with the For-Profit concept of equity in that donors have contributed risk capital to providers. In turn, risk capital has an opportunity cost (or required return) just like equity capital in the For-Profit setting. This reflects equity capital costs on both donor contributions to providers and the buildup (or builddown in the event of losses) of retained earnings in the unrestricted net asset account.

<sup>6</sup> For a complete discussion of EVA, see Grant (2003).

<sup>7</sup> In effect, “*t*” is an unlevered tax rate because EVA equals NOPAT *less* cash taxes free of any debt tax subsidies. This is relevant for For-Profit providers.

<sup>8</sup> This section draws on EVA application from Grant (2003); recast with application to For-Profit and Not-for-Profit healthcare providers.

<sup>9</sup> The assumed margins are actually higher than the 3-4% median margins observed for hospitals over the 1998 to 2003 period. For example, median operating margins for Massachusetts hospitals range from about -1% to 0% during this six-year period. See Hayden (2005).

<sup>10</sup> For analysis of healthcare providers using traditional metrics, such as operating margins, turnover ratios, and rate of return metrics (ROA, ROI, and ROE), see Gapenski (2003). See also Carlson (2005) for recent insights on how to use balance sheet management and structured (tax-exempt) debt products as a way of enhancing the visibility of providers to investors. In this EVA primer for healthcare providers, we emphasize a value proposition for enticing investors via positive economic earnings as reflected in the difference between a provider’s operating earnings and its dollar cost of capital (or positive spread between return on capital and cost of capital).

<sup>11</sup> For convenience, we’ll assume that depreciation on medical facilities and equipment is included in the SG&A account. Without getting into EVA details, one could also distinguish between accounting depreciation and economic depreciation.

<sup>12</sup> We’ll discuss how to calculate the cost of capital for a Not-for-Profit provider following our discussion of a For-Profit. By their namesake, Not-for-Profits do not pay taxes (strictly speaking) so there are no tax subsidies arising from asset depreciation and interest expense on debt financing. However, the cost of equity, more aptly, “fund equity” needs to be grossed up by  $(1-t)$ .

<sup>13</sup> See Sharpe (1964). Also, the “just right” way of calculating a company’s cost of equity has come under several empirical challenges. For example, see Fama and French (1992). However, it should be noted that the validity of the EVA model does *not* require that asset prices are set according to the single (beta)-factor CAPM.

<sup>14</sup> The cost of equity for a Not-for-Profit provider, referred to as “fund” equity, deserves special attention which we’ll discuss in a later section.

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<sup>15</sup> Persistently negative EVA leads to negative NPV (value destruction).

<sup>16</sup> The spread between ROC and WACC is commonly referred to as the “EVA spread.” If goodwill (arising from premiums paid in corporate acquisitions under purchase accounting) is listed on a provider’s balance sheet, then one can distinguish between the operating return on capital and the total return on capital. As Peterson emphasizes (2000), the appropriate capital return measure depends on whether managers are interested in measuring the firm’s operating efficiency—which calls for using the former profit ratio—or the efficiency of management in using total capital—given perhaps an acquisitions strategy which would call for using the latter ratio. Also, which capital measure to use is poignant for healthcare providers if one treats charity care and related medical intangibles as key to fulfilling a community service mission.

<sup>17</sup> As noted before, the difference between assets and liabilities for Not-for-Profit providers is often called “net assets.” We’ll replace this rather non-descript terminology with the words “fund equity” for reasons cited before.

<sup>18</sup> The growth opportunity figures are expressed for OK Health as a For Profit provider. To obtain the corresponding change in EVA for a Not-for-Profit, simply “gross up” (or divide) the after-tax change in EVA by  $(1-t)$ .

<sup>19</sup> This applies to OK Health as a For Profit provider. As a Not-for Profit provider, we interpret equity contributors (grantors and donors) as fund equity holders (investors).

<sup>20</sup> See Grant (2003).

<sup>21</sup> The first four ways of improving EVA are consistent with those mentioned by Tully (1993).

<sup>22</sup> The positive impact of tax efficiency applies only in the For-Profit setting.

<sup>23</sup> Alfred Marshall (1890, p. 142) is often cited for the economist’s notion that “profit” should be reflect opportunity costs (and benefits).

<sup>24</sup> Stewart (1991).

<sup>25</sup> Net operating profit *before* taxes (EBIT) is also the same as operating profit *after* depreciation and amortization.

<sup>26</sup> In other words, R&D expenditures should be capitalized and amortized over a useful time period such as five years—rather than expensed in the current year as if these expenditures have no future cash flow benefits. For example, if R&D expenditures for a given year were \$100,000, then \$80,000 would be placed on the EVA balance sheet (at year end) and the remaining \$20,000 would be charged to income. Assuming the entire R&D investment were already included in a Selling, General and Administrative expenses account, then the *net* R&D increase of \$80,000 would get added back to obtain the EVA amortization of R&D expenditures, at \$20,000. A similar EVA treatment would apply to medical intangibles, unique to healthcare providers.

<sup>27</sup> The normal amount of cash required for operations varies by industry—say 0.5% to 2% of net sales. As noted before, one can make a distinction between total invested capital and operating capital. Operating capital is generally viewed as invested capital net of excess cash and marketable securities *and* goodwill-related accounts. In principle, excess cash could be used to pay down debt; in that event, EVA debt would be interpreted as net debt.

<sup>28</sup> In practice, it may be better to list the capitalized value of net charity care and like expenditures that are part of a provider’s mission as “equity equivalents” (mentioned next).

<sup>29</sup> The EVA recognition of “off balance sheet” debt brings up an interesting issue. While EVA accounting uses information that is deemed accurate from a company’s *published* financial reports—including income statement, balance sheet, and relevant footnotes, EVA like accounting profit cannot possibly reflect “off balance sheet” debts arising from hidden liabilities or fraudulent accounting transactions as in the notorious case of Enron.