



The EVA Measurement Formula

A Primer on Economic Value Added (EVA)

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First Principles

EVA, for economic value added, is an estimate of a firm's true economic profit. EVA computes profit according to economic principles and for managing a business, measuring its value and making peer comparisons, and not to follow accounting conventions.

At its essence, EVA is a simple three-line calculation – it is sales, less all operating costs, including taxes and depreciation, less a full weighted-average cost-of-capital interest charge on all the capital, or net assets, used in business operations.

As a formula, EVA is NOPAT, or net operating profit after taxes, less a capital charge that one computes by multiplying the firm's capital base by its cost of capital:

$$\text{EVA} = \text{NOPAT} - \text{A Capital Charge}$$

$$\text{EVA} = \text{NOPAT} - \text{Cost of Capital} \times \text{Capital}$$

To take a simple example, if a company's NOPAT is \$150 and \$1,000 is tied up in balance sheet assets financed with a capital blend that could be invested in the market for an expected long-run return of 10%, then its EVA is \$50. It is \$150 in NOPAT less the \$100 opportunity cost of the capital.

NOPAT, Capital, and Cost of Capital Clarifications

Let's explore the main EVA ingredients in a little more detail. In a subsequent section, corrective adjustments are discussed in depth.

NOPAT is measured after deducting depreciation and amortization. Though not cash charges, depreciation and amortization are real economic costs. Assets wear out or become obsolete and must be replaced if a company is to remain competitive and sustain profits. NOPAT thus estimates the cash that a firm can safely distribute to investors while maintaining its capital stock¹.

NOPAT is based on operating profit. It is measured before deducting interest expense or any financing charges. It is the profit from business operations and attributable to business assets. It is the profit available to cover and pay all financing costs, which are the costs contained in the capital charge.

NOPAT is measured after tax. Taxes must be paid before value can flow to shareholders.

Capital is defined as a firm's total assets, net of interest-free trade funding from sources like accounts payable and accrued expenses. Because balance sheets must balance, capital is also equal to the sum of all interest-bearing debt and equity. The money raised from investors is the money invested in the business. If managers tend to the business assets, the investors financing those assets will be well taken care of.

The cost of capital in the EVA formula is not a cash cost that a company must pay. It is an opportunity cost, a foregone return. It is an estimate of the rate of return that the company's

¹ As a practical matter, NOPAT is computed using a company's reported depreciation and amortization charges as proxies for the true economic costs.

investors could expect to earn by purchasing a stock and bond portfolio that matches the risk profile of the company's debt and equity. A debt-free company that pays no interest, and that chooses not to distribute dividends or buy back shares, still has a cost of capital according to this definition because investors always have other opportunities for their money. And until that available return is earned, a company is mismanaging capital and really losing money regardless of the accounting profit it reports.

The capital charge is determined by multiplying the cost of capital times the amount of capital invested in the business. It's effectively a minimum NOPAT goal, a threshold to breakeven on EVA, set by the market, and automatically adjusting up or down as more or less capital is invested in the firm. It brings the demands of the capital markets into the management of a business.

From a financial perspective, the capital charge is the amount of profit a company must earn to enable it to pay interest on its debts, after taxes, and leave a remainder that gives its shareholders a fully satisfactory return on their equity investment in the firm, including the retained earnings. A company that exceeds its capital charge and that earns EVA can never go bankrupt, can always obtain additional financing, and could always pay a dividend (its value, though, lies in its *ability* to pay dividends, as measured by its EVA, and not by whether it pays dividends).

EVA combines NOPAT and capital charge, the P&L and balance sheet, into a single score that measures all the ways that value can be created in any business, which fall into these three categories:

Operate Efficiently (increase NOPAT without increasing capital)

- ✓ delight customers and earn the right to charge premium prices
- ✓ cut wasteful costs and optimize processes
- ✓ save or defer taxes

Manage Assets (reduce capital tied up in assets and activities that earn less than the cost of capital)

- ✓ turn working capital faster and release the cash
- ✓ increase capacity utilization, and economies of scale, and do more with less PP&E capital
- ✓ cut out underperforming assets, customers, product lines, not earning the cost of capital
- ✓ outsource assets (like IT assets) to more efficient third-party vendors

Profitable Growth (invest capital in all positive NPV projects and strategies)

- ✓ innovate, invest, and grow revenues, but be sure to cover all costs, including the cost of any newly invested capital

An increase in EVA is a highly reliable sign that a company is adding value considering all potential sources and their relative significance. A reduction in EVA shows a firm is very likely losing ground, all things considered, even if other measures are looking better.

The proof lies in the fact that the present value of a forecast for EVA is always identical to the net present value of the forecast cash flows. EVA sets aside the profit that must be earned in each period to recover the value of the capital that has been or will be invested, and thus EVA always discounts to the value added to, or deducted from, the capital base. To increase EVA is to increase the intrinsic net present value of a business—by definition.

Corrective Adjustments to Measure NOPAT, Capital, and EVA

Let's now consider the corrective rules that ISS applies to eliminate or mitigate distortions introduced by GAAP accounting rules. The adjustments improve EVA in several ways:

1. Normalize EVA and better reveal a firm's underlying earnings power
2. Improve EVA's reliability as a period-to-period measure of performance and value
3. Enhance the ability to compare EVA over time and among companies
4. Motivate managers who follow EVA to make optimal decisions that increase the firm's intrinsic value and to avoid those that don't
5. Adhere closer to economic principles than accounting rules

As a practical matter, ISS imposes a set of constraints on the adjustments:

1. The adjustment rules must be codable as formulas that can be broadly applied; no allowance can be made for individual company factors or human judgement, other than in the construction of the rules
2. The rules are limited to those that can be applied to the Standard & Poor's Compustat® file of fundamental financial data, which is the underlying source ISS uses to compute EVA
3. The adjustment rules must follow double-entry bookkeeping. A pro-forma adjustment to earnings requires a corresponding pro-forma adjustment to balance-sheet capital. This is necessary to maintain the identity that the present value of EVA equals the present value of cash flows.

Let's now consider the adjustments, one by one.

1. Treat R&D and Advertising as Investments, not Expenses: Conventional accounting rules dictate that the money spent on research and innovation and on advertising and promoting products and services be deducted in computing profit. Nowadays the value of innovation, brands and customer relations seems obvious. But the accounting framework was developed long ago and was originally formulated to support lenders, who ask, what assets can be sold to repay loans in the event a business fails? Hard, tangible, fungible, tradable assets qualify, of course, and intangible ones as a rule don't—if the R&D and advertising were valuable, then why is the firm being liquidated? Long ago, creditors took the position that accountants should write off the money spent on generating intangible assets, leaving only hard assets on the books as collateral.

Shareholders take a completely different point of view. Except in rare circumstances, they aren't concerned with a firm's liquidation value. They are buying into a firm's long-run going-concern value. From that perspective, any cash outlay that is *expected* to bring benefits and a stream of profits in future periods is an investment (and cash outlays totally consumed in a period are expenses). R&D, advertising, and promotion clearly qualify. Not every such investment works out; in fact, many fail. But overall and as a portfolio, intangible assets are the engines of innovation, productivity gains, and new customer values.

EVA adopts the shareholder perspective that R&D, advertising, and promotion are investments, not expenses. The outlays are not deducted from profits. They are added to balance sheet capital

and written off against earnings over a period of years approximating their economic lives², just as if the outlays had been used to purchase plant and equipment assets. The cost of capital, too, is charged. It is applied to the investment balances that remain on the balance sheet.

To take an example, suppose a company spends \$100 on R&D in a year. With traditional accounting, \$100 is immediately written off. With EVA, the \$100 is added to capital, and assuming a five-year amortization period as is typical, \$20 a year is amortized as a charge to earnings. As for the capital charge, assuming the cost of capital is 10%, the first-year charge is \$10 (10% times \$100). In the second year, it's \$8, it's 10% on \$80, because the capital balance that started at \$100 drops to \$80 once the first year's amortization is taken away. The charge continues to drop \$2 a year as the capital is amortized. The choice, then, is between expensing \$100 up-front or recognizing \$30 (\$20 in amortization plus \$10 in capital charge), \$28, \$26, \$24, and \$22 over the five years. The present value is the same, at the 10% cost of capital, but the pattern is different, and that endows EVA with significant analytical and managerial benefits, such as:

- ✓ EVA better matches the cost recognized in each period with anticipated benefits, which means that the period-to-period change in EVA is a much more reliable measure of progress than reported income.
- ✓ EVA does not misleadingly increase if managers cut the spending—because a cut will be spread over years instead of concentrated in one period. This diminishes the incentive for managers to cut the budget just to make a short-term earnings goal.
- ✓ EVA does not misleadingly decrease if managers are stepping up the spending to seize an opportunity—once again because any increase in the spending is spread over time and not concentrated in the current period. This motivates managers to think longer term and more strategically without worrying about an adverse hit to near term profits.
- ✓ EVA holds managers accountable for recouping the investments they make in intangibles and obtaining at least a minimum acceptable return. EVA heightens accountability for results.
- ✓ EVA neutralizes comparisons between companies that buy intangible assets and those that create them in house. GAAP rules permit companies to recognize the value of intangible assets when they purchase them, and to amortize the value over time (or not at all for indefinite lived intangibles like brands). GAAP ironically treats intangibles as assets when they are bought but not home grown. GAAP income gives the impression it is more attractive to buy the assets than buckle down and develop them in house. EVA levels the playing field by putting internal investments on the balance sheet as capital and writing them off over time. Managers no longer have a bias to buy technology, brands and capabilities. EVA allows them to correctly measure the relative merits of creating them in-house instead.
- ✓ The total investment a company is making in each period is more accurately measured. Buying hard assets is not all that counts. Investing in innovation, in brand, and in connecting with customers counts too, and appears in the capital base as calculated by EVA.

² In general, R&D is amortized over five years and advertising and promotion over three. Pharmaceutical and biotech companies are the exception: research is written off over 10 years and advertising over 5 years in light of patent protection.

2. **Reverse impairment charges:** Rather than deducting impairment charges from profits as GAAP mandates, with EVA the charges are reversed. Impairment charges are added back to reported earnings and back to balance sheet capital³. An impairment is thus a non-event, with no impact on EVA. It is as if the impairment never happened, and never created a one-time distortion of earnings.

Impairments do occur, of course—when an asset no longer generates a return to cover the cost of the capital invested in it, which is precisely when its EVA turns negative. Put simply, it is the on-going reduction in EVA that signifies an asset or business has lost value, not a one-time bookkeeping charge. EVA thus holds management fully and visibly accountable for its capital decisions without forcing an impairment charge through the P&L.

3. **Capitalize restructuring costs:** With EVA, restructuring charges follow the same rule: they are added back to earnings and to balance sheet capital, where they are subjected to an on-going capital charge. The rule brings about important benefits:

- ✓ Restructuring charges do not hit and distort profits in the period incurred. EVA reflects the firm's underlying earnings power. Comparability is enhanced.
- ✓ Managers no longer have an incentive to sustain weak businesses and pour more good money after bad just to avoid a restructuring charge. They exit and restructure as makes sense.
- ✓ EVA holds managers accountable for restructuring efficiently and delivering improvements. Any money spent on such things as severance pay, cancelling contracts or relocating assets is added to the firm's capital base, and a return must be earned on it, just like any other investment.
- ✓ EVA turns a restructuring from an admission of failure into a pro-active opportunity to invest capital and earn an attractive return by mobilizing assets and streamlining operations.
- ✓ Double-entry bookkeeping is preserved. The pro-forma adjustment to earnings is balanced by a pro-forma adjustment to balance sheet capital.

³ As a practical matter, only the unusual and non-recurring charges occurring after 2003 are capitalized and carried forward. Charges prior to 2004 do not impact current EVA.

4. **Use cash accounting for losses and gains on sale:** EVA adds back the losses on asset sales to profits and to capital, where the losses are subject to a capital charge. With this rule, managers are not deterred from selling assets at losses because the losses are reversed. In fact, EVA motivates them to sell all assets that are fundamentally worth more to others, the ones for which the sale proceeds, net of tax, invested at the cost of capital, will produce more EVA in the long run than continuing to own the business.

The treatment is symmetrical; gains on sales are *excluded* from profits and apply as a *reduction* in capital. There is no benefit to harvesting a gain in one period that reflects the capitalized value of the EVA profits that an asset is expected to produce in future periods.

Regardless of whether an accounting gain or loss is recognized, the decision that maximizes EVA is the same—it is to sell assets where reducing capital by the after-tax proceeds creates more EVA than continuing to own the assets.

Here's an example of cash accounting. Suppose an asset is carried on a company's books for \$100 and it generates NOPAT of \$4. If the company's cost of capital is 10%, the capital charge is \$10 and the asset's EVA is -\$6.

Assume the asset earns the \$4 NOPAT forever and that the depreciation deducted from NOPAT is re-invested each year to maintain the asset's book value at \$100. In that case, it is worth \$40. It's worth the present value of the \$4 NOPAT, at 10%. That's also the present value of the -\$6 EVA at 10%, or -\$60, added to the book capital of \$100. Either way, the market value is \$40, or \$60 less than book value.

Suppose an offer is made to buy the asset for \$75. That's \$35 more than it is worth to the seller to keep it. Selling makes sense, clearly, and the numbers should reflect that.

But accounting rules say otherwise; the seller will have to book a \$25 loss on the sale. Under EVA, however, the loss is reversed and added to capital. The seller's capital is initially reduced by \$100 when the asset is sold and erased from the books, but with EVA, the \$25 loss is added back and stays there forever. The EVA accounting is as if the firm's accountants had debited cash \$75, for the sale proceeds and credited the firm's Capital account for \$75, leaving an unrecouped \$25 in Capital. Say it how you will, there is on-going capital charge of \$2.5 and thus EVA is -\$2.5 a year as there is no longer any NOPAT from the business. It's been sold.

The company's EVA is still negative, but it is less negative, and that is what counts. EVA increases from -\$6 to -\$2.5, a gain of \$3.5, which is realized each year. The present value at 10% is \$35, which is the value the seller realized by selling an asset worth \$40 for \$75. It all ties. EVA always gives the right answer and the right incentives to sell businesses worth more to others.

5. **Capitalize unusual and non-recurring items:** Book profits can be affected by settlements, acquisition and merger related costs, gains and losses on debt extinguishments, discontinued operations, and other extraordinary and non-recurring items. Under EVA, the charges, less gains, after tax, are excluded from earnings, which permits the underlying and recurring profits to surface. The one-time charges are also added to balance sheet capital. They are considered investments to stay in business and sustain the going-concern. With EVA, managers aim to minimize one-time charges like those and not just dismiss them.

6. **Eliminate the impact of holding surplus cash:** Excess cash⁴ is removed from capital, and the associated investment income is removed from earnings. EVA thus isolates the performance of the business, which makes it more comparable over time and versus peers. Because EVA is measured as

⁴ ISS defines excess cash as cash and marketable securities more than 2% of sales

if surplus cash had been paid out, if it is paid out, either as a dividend or as a share repurchase, it is a non-event. A payout is considered equivalent to withdrawing money from a savings account—it is an inconsequential transfer from one pocket to another. Earnings per share, by contrast, can get a powerful boost from a share repurchase, which is highly misleading.

7. Treat leased assets as if they were owned: The interest component of rents is backed out of NOPAT profits, after taxes. The estimated present value of rents⁵ is added to balance sheet capital, where it is subject to a full weighted-average cost-of-capital interest charge. The net effect is to measure EVA essentially as if all rented assets were owned. EVA thus depends on the quality of asset management and not how the assets are being financed. Accounting rules are changing⁶ to capitalize operating leases and treat them essentially in this manner. When that happens, EVA will provide a consistent measurement of performance before and through the transition period.

8. Smooth Taxes: The tax on NOPAT is computed by applying a standard tax rate to operating profit. The standard rate is set by ISS to approximate the average effective tax rate on pre-tax, pre-interest profits⁷. Thus, one-time tax settlements and penalties, shifts in tax reserves and changes in effective tax rates do not obfuscate underlying business performance. Said simply, pre-tax operating performance flows through to after-tax EVA. Deviations from a normal tax rate, i.e., the tax distortions, are smoothed by accumulating them in a “created” deferred tax account (discussed below)

9. Recognize the value of deferring taxes: Deferring taxes provides interest-free funding that decreases the capital a company needs to raise from lenders or shareholders. EVA is thus credited with the cost of capital that is saved by using tax deferrals (including “created” deferrals from smoothing taxes with the standard tax rate mentioned above) to reduce capital. It’s symmetrical: deferred tax assets, which represent a pre-payment of tax and use of cash, are charged for the cost of capital.

10. Recognize the tax benefit value of deducting stock options: The value of stock options that employees exercise is a tax-deductible expense that reduces the corporate tax bill and effectively funds the business with interest-free capital. The cost of capital on the excess tax benefit of exercised stock options (excess to the expected cost) is added to EVA.

11. Exclude AOCI hedge gains (losses) from capital: The capital charge associated with unrealized gains on derivatives that are used as hedges is excluded from EVA; the gains are

⁵ ISS estimates the present value of operating leases as 7 times the company’s rent expense over the lagging four quarter period

⁶ The new standard is slated to take effect on January 1, 2019, for December filers, and will require organizations that lease assets— referred to as “lessees”—to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases.

⁷ In periods prior to implementation of the Tax Cuts and Jobs Act of 2017, the standard tax rate was estimated with a regression model based on a company’s sector, size, profitability, and the percent of income from foreign sources, and generally ranged from 20-40%. Subsequently, with the new lower tax rate, and for simplicity, the standard tax rate for U.S. corporate filers has been set to 25%.

presumed to be offset by unrecorded yet real capital losses on the offsetting positions the derivatives hedge (and vice versa).

12. Deduct Net Charge Offs of Bad Debts: Instead of deducting the provision for bad debts or loan losses from earnings, as GAAP mandates, with EVA, the bad debts and loan losses charged off in the period, net of recoveries, are deducted. EVA switches from a malleable bookkeeping estimate to a realized event, from something that accountants manage to something managers can manage.

13. Convert LIFO inventory costing to FIFO: LIFO reserve is the difference between the value of our inventories using a first in, first out (FIFO) costing assumption and a last in, first out (LIFO) assumption. Under EVA, the reserve is added to capital and the change in the reserve is added to profits, after taxes. This shifts capital from reflecting a LIFO inventory valuation to a FIFO value, which generally better approximates current replacement costs. It also effectively shifts cost-of-goods sold from LIFO to FIFO costing while preserving the tax benefit of deducting the generally more expensive LIFO costs. Another benefit is that it cancels the illusory GAAP profits that are recorded when inventories are depleted and outdated LIFO inventory layers are liquidated.

14. Eliminate retirement cost distortions: With EVA, reported retirement costs are added back to earnings and the so-called service cost is deducted instead. The reported costs in one period effectively average the costs and funding strategies over many periods, and they depend on assumptions that management makes about the rate of return on the funding portfolio. It is highly unreliable, to say the least. Service cost, by contrast, measures the money sum that a company would have to set aside and invest at a low-risk rate of interest to cover the future benefit payments that employees earned due to employment *in the current period*. It is a far better estimate of the true incremental cost.

EVA also converts a retirement funding shortfall (measured relative to the accumulated service cost) into an equivalent period charge by multiplying it times the cost of capital. The present value of EVA so impaired fully deducts the existing funding gap from the firm's value (and adds a funding surplus).

15. Equity, not Entity: NOPAT is measured after setting aside the earnings due to non-controlling interests. Capital correspondingly is measured net of the equity provided by non-controlling interests. The resulting EVA measures the value of the business to the parent company stockholders.

Special Definitions for Financial Intermediaries

A few modifications apply to banks and other financial intermediaries that engage in borrowing money from depositors and other creditors at one rate and lending it out at a higher rate to make a spread. In these businesses, the interest earned on loans and other financial earning assets is considered revenue, and interest paid on deposits and other purchases funds is considered a deduction from revenue. Revenue, in other words, consists of net interest income plus fee income. Interest expense is an operating cost, not a financing cost.

A second feature is defining Capital solely as common equity capital. Interest-bearing deposits and other funding sources, along with capital notes and preferred stock, are not part of it. Accordingly, all financing expenses, including interest on capital notes and dividends on preferred

shares, are deducted from NOPAT, and the cost of capital is set to the cost of equity capital alone, not a weighted-average cost of capital. Put another way, in these businesses, NOPAT is net income and Capital is limited to equity capital (as adjusted). Insurance companies and REIT's are treated the same way.

REIT's are generally not taxed but investors in REIT's are. To equalize comparisons with fully-taxable C corporations, an estimate of the investor-level tax is deducted from NOPAT.

The Cost of Capital

A company's cost of capital is the rate of return that its investors could expect to earn by purchasing a stock and bond portfolio that matches the company's risk profile.

In practice, ISS estimates a company's cost of capital as the prevailing yield on long-term government bonds (which is the same for all companies in a market), plus a premium varying from 1% to 8% to compensate for the risk in the firm's principal line of business (which is the same for all companies in that sector), less a discount for the tax deductibility of interest on the debt the firm employs (which is company-specific). The tax benefit of debt is derived from the blend of debt and equity employed over the trailing 12 quarters. Thus, unlike earning-per-share and return on equity, which are influenced by the actual debt/equity mix that a company uses in a single period, EVA is based on a long-run capital structure mix. It is impervious to the impact of transitory changes in capital structure, such as when a firm borrows to finance a major acquisition or to buy-back its stock.

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Significant Accounting to EVA Adjustments

Adjustment	Technique	Impact
Capitalize Investments in Intangible Assets	Do not deduct R&D and Advertising from profit; rather, add it to Capital, subject to a capital charge, and amortize the spending over 5 years for R&D and 3 years for Advertising	EVA is smoothed and more comparable; motivates managers to step up spending on promising opportunities, and to resist cuts just to make near term earnings goals
Capitalize Impairment, Restructuring Charges, Losses on Sales, and Non-Recurring Items, net of Unusual Gains	Do not deduct the charges from profits; rather, add them to Capital, subject to an on-going capital charge	Impairments are inconsequential; impetus to restructure promptly and efficiently, sell assets worth more to others, manage risks and minimize non-recurring charges
Eliminate Impact of Excess Cash	Remove excess cash from Capital and the associated investment income from NOPAT	EVA measures business performance; it is unaffected by retaining or paying out excess cash, because shareholders own the cash whether it is in the firm or in their hands
Treat Leased Assets as If Owned	Back the interest in rents out of NOPAT; add the present value of rents to Capital, subject to the full capital charge	EVA measures management's ability to manage assets, regardless of how they are financed; firms that lease or buy can be fairly compared
Smooth Taxes	Measure the tax on NOPAT at a set standard tax rate	Temporary shifts in the effective tax rate do not distort EVA
Recognize Value of Deferred Taxes	The cost of capital saved by deferring taxes is added to NOPAT	The value of deferring taxes is recognized
Deduct the Net Charge Offs of Bad Debts	Add the provision for bad debts to NOPAT and deduct net charge offs instead; add bad debt reserve to Capital	Switches from a bookkeeping provision to actual events that managers can manage
Switch from LIFO to FIFO	Add the LIFO reserve to Capital, and the change in LIFO reserve to NOPAT	Inventories closer to replacement cost; FIFO cost-of-goods sold with LIFO tax benefit
Eliminate Retirement Cost Distortions	Add reported retirement expense to NOPAT, deduct service cost instead; deduct the cost of capital	EVA unaffected by the assumed return on retirement assets;

	times any net unfunded liability, add for a gain	reflects true incremental cost; Funding losses reduce EVA
Equity, not Entity	Deduct the provision for non-controlling interests from NOPAT; deduct NCI equity from Capital	EVA measures the value to the parent company shareholders
Cost of Capital	Reflects long-term government rates and the firm's sector risk, less the strategic tax benefit of debt	Measures the opportunity cost of the capital; a hurdle rate to create value; set by a target debt ratio

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