In their comment "Search for the Best Financial Performance Measure: Basics Are Better" (January/February 1998), Robert Ferguson and Dean Leistikow critiqued the refined economic value added (REVA) measure we introduced in "The Search for the Best Financial Performance Measure" (May/June 1997). Ferguson and Leistikow argued that the original economic value added (EVA) measure is superior. This reaction was surprising to us. Because REVA and EVA differ only with regard to the capital base, the only point of contention is which capital base—EVA's adjusted book value or REVA's market value—is a better measure of value. Unfortunately, Ferguson and Leistikow's logical errors in interpreting REVA apparently led them to miss this point.

In this letter, we briefly refute the key criticisms raised by Ferguson and Leistikow, which are given in the quotations we use here as subheads. As we clarify in the following arguments, any criticisms of REVA that are unrelated to the estimation of capital can also be applied to EVA. Similarly, any problems that EVA addresses can be addressed by REVA.

"Their REVA variable is highly significant, but their R^2's are virtually zero." Ferguson and Leistikow argued that our correlations are too low and that "REVA almost surely... explains virtually nothing." This argument is curious: If REVA's correlation with abnormal stock returns is "too low," how can EVA, which has an even lower correlation, be a better measure? Unfortunately, no "theoretically appropriate" benchmark correlation between REVA and abnormal return exists. For example, we cannot assert that, say, 30 percent of the variation in abnormal returns, on average, is the result of managerial behavior, so a regression on abnormal stock returns could be expected to be 30 percent.

In the absence of knowledge of such an acceptable R^2 benchmark, we have no way to determine when a correlation is too low and Ferguson and Leistikow's discussion of the correlation fallacy is misguided. Furthermore, measurement errors interfere (e.g., because of bid–ask bounce) with observing true abnormal stock returns, and our estimates of expected stock returns suffer from measurement error. The effect of measurement error on estimates of stock returns, variances, and covariances is well known (see, for example, Scholes and Williams 1977; Dimson 1979; Amihud and Mendelson 1987).

Ferguson and Leistikow also claimed that basing compensation on abnormal returns is inappropriate because it provides managers with "an option on noise." This claim is wrong. The abnormal return for an individual company may be noise for a diversified investor, but it is not noise for the company's managers. Indeed, the contemporary literature on agency theory and compensation (e.g., Ramakrishnan and Thakor 1984) shows that optimal managerial incentive contracts will be based on abnormal returns.

"Their regressions are thus misspecified. . . ." Ferguson and Leistikow further argued that the "situation is worse" in that the coefficients in our regressions change through time, indicating that our regression methodology is invalid. Indeed, it was because of our concerns about model misspecification that we also used some nonparametric tests, which the authors chose not to discuss. We tried to reduce the potential specification bias by correlating the sign of REVA with the sign of abnormal returns. Again, we found that REVA correlates better than EVA. (In earlier drafts, we also provided evidence using neural networks, but this discussion was omitted because of space constraints.) Thus, we provided evidence that suggests that REVA is superior to EVA both in terms of correlations with abnormal returns and the sign of abnormal returns.

"The abnormal returns associated with unanticipated management decisions occur when the decisions become known. . . . [If you pay management a one-time lump sum when the idea becomes known, they] have less incentive to remain." Such a criticism might be valid if managers were compensated on the basis of stock price, but we are not advocating such an arrangement. Our measure rewards managers on the basis of realized net operating profit after taxes (NOPAT) relative to a capital charge assessed on beginning-of-period market values. Because market value is fixed in REVA, the change in market values is irrelevant. If the activity is, indeed, value enhancing, then the company should experience higher-than-expected NOPATs and REVA will be positive in future years. Moreover, Ferguson and Leistikow's statement...
that managers "have less incentive to remain" relates to how REVA is used in compensation design, not to a problem with REVA per se. An appropriately designed compensation plan could spread the REVA-based bonus over time to provide incentives to managers to remain with the firm.

An EVA-based ("sensible") compensation plan ensures that "the managers must stay on. . . ." Ferguson and Leistikow argued that a solution to making a one-time payment is to compensate on EVA. As we noted, the same can be done with REVA. Therefore, the only thing that would make EVA compensation "more sensible" than REVA would be if book value were a better measure of capital than market value.

The example on p. 84 contains the following: "... the firm can sell its assets, as opposed to its business, for only $100, so the firm's invested capital is $100." Ferguson and Leistikow provided an example of a company with a market value of $200 and a book value of only $100. They argued that, because the invested capital must be sold piecemeal, the invested capital is only $100 despite the market value of the company. But this argument is a proof by assumption: Selling the assets of the company piecemeal at book value is an alternative, but it is not the next best alternative, and rational investors would not liquidate this company. Instead, they would sell the business intact and collect $200, which is then the true measure of their invested capital. To see the absurdity of Ferguson and Leistikow's claim, consider whether Microsoft's investors would accept an offer to sell their Microsoft stock at its adjusted book value.

"Fairfield's algebra does not work if the firm's market value is used in place of its net asset value . . . ." Fairfield (1994) showed that

\[ P_0 = B_0 + PV(E_a) \]
\[ = B_0 + PV(EVA), \]  
where \( P_0 \) is the market value, \( B_0 \) is book value, and \( E_a \) is the abnormal earnings, or EVA.

For simplicity, assume that EVA is a constant perpetuity. Equation 1 then becomes

\[ P_0 = B_0 + \frac{EVA}{k} \]
\[ = B_0 + \frac{E(NOPAT) - k(B_0)}{k} \]
\[ = \frac{E(NOPAT)}{k}, \]

where \( k \) is the company's cost of capital. Observe that book value no longer appears. Fairfield's algebra holds regardless of what is used as the capital base. We could set \( B_0 \) equal to any number and the algebra would still hold. Of course, if we simply substituted REVA for economic earnings in Fairfield's model and added the present value of REVA to book value, then clearly the equation would not be satisfied (unless market value and book value were equal). But such an inconsistent application of the valuation formula is nonsensical.

At this stage, the reader may be puzzled about how we can claim REVA is superior to EVA, when the choice of capital base is irrelevant in Equation 2. The key is that REVA has a natural benchmark (zero) whereas EVA does not. Simply put, if a company experiences a positive REVA, it has added value in that period. In contrast, a positive EVA need not indicate that value was created. What one needs to do is compare the actual EVA with the expected EVA, which requires calculating market values as in REVA. (The mathematical details underlying the discussion in this and the following paragraph are available from the authors upon request.)

Another point of apparent confusion can be seen in Ferguson and Leistikow's assertion that because REVA always has an expected value of zero, managers have no incentive to innovate: Once the market adjusts for the innovation, the expected REVA remains zero. Of course, this assertion is simply based on a misapplication of REVA. The expected REVA is based on the initial market value of capital, before the manager has had any impact that could be reflected in the market value. (From this point on, the capital base ideally should never be updated unless, of course, additional capital is employed.) As long as the initial capital is used to assess the capital charge in the expected REVA, any increases in NOPAT resulting from subsequent managerial actions will lead to an increase in the actual REVA relative to the expected REVA.

"Any . . . rational stock market will price the stock at a price/NAV [net asset value] of 1.125, not 1.25." This statement refers to the numerical example in which we assumed that the market price of one share in an all-equity company was $50 and investors required a 10 percent return. Somehow, Ferguson and Leistikow were able to determine that the "correct" price in this setting was $45 instead of $50. Their assertion is puzzling, because we described a single-period illustration in which $50 and 10 percent were exogenous (i.e., they were nothing more than assumptions about primitive variables in the illustration). To claim that these were wrong is a bit like a student objecting to the chosen weights when a physics teacher is explaining Newtonian gravity by illustrating what happens to a ball weighing 10 pounds and a ball
weighing 30 pounds when they are simultaneously dropped from the top of the Leaning Tower of Pisa.

**Conclusion.** We reiterate our claim that market value is superior to book value as a measure of shareholder capital. We are surprised that this statement would even be a point of contention. Indeed, we are surprised that EVA users are not uncomfortable with the fact that their capital charges are calculated from market values for the percentage representations of debt and equity in the cost of capital and from book values for dollar values of capital. Although book value represents the amount invested at the start of the business, at any time after that, the true investment by the shareholders is the market value of the company. Remembering this basic finance principle is the only way to clearly understand the relevant issues.

The comments and opinions contained in this letter are those of the authors and do not necessarily reflect the views of the directors, members, or officers of the New York Stock Exchange, Inc.

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References


Search for the Best Financial Performance Measure: Basics Are Still Better

In their comment on our paper "Search for the Best Financial Performance Measure: Basics Are Better" (January/February 1998), Jeffrey M. Bacidore, John A. Boquist, Todd T. Milbourn, and Anjan V. Thakor offer a reply to our critique with a clever addition to the title—"If You Understand Them." We believe their rejoinder, however, indicates a misunderstanding of our critique.

Bacidore et al. assert that "the only point of contention is which capital base . . . is a better measure of value." They also say, "Unfortunately, Ferguson and Leistikow's logical errors in interpreting [refined economic value added] (REVA) apparently led them to miss this point." Curiously, the majority of Bacidore et al.'s comments pertain to other issues, and nowhere do they substantiate that we missed the point on the capital base.

To keep things simple, our remaining comments are put under the headings Bacidore et al. used.

"[T]heir REVA variable is highly significant, but their R²s are virtually zero." Bacidore et al. do not deny this statement. Their first rationalization is that the correlations are even lower with economic value added (EVA). This point might be a telling one if we had reason to expect their regressions to show anything useful for either REVA or EVA. Because there is no reason, their rationalization is, in a word, rationalizing. Their second rationalization is that lack of knowledge of an "acceptable" R² makes their low ones okay. Any reasonable person will find an R² as low as the one found by Bacidore et al. to be valueless, no matter how statistically significant.

Bacidore et al. comment concerning options on noise as follows: "The abnormal return for an individual company may be noise for a diversified