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## On the Use of Capital Efficiency Metrics

*THE REAL KEY TO CREATING WEALTH -- Rewarded by knockout results, managers and investors are peering into the heart of what makes businesses valuable by using a tool called Economic Value Added. It posits that you can't know if an operation is really creating value until you apply the true cost of capital to all the capital employed.*

— Cover story of *Fortune*, September 20, 1993

Capital efficiency metrics were developed to quantify how well a company utilized available capital to drive an increase in value. Because outside stakeholders were often concerned with the productive use of their investment, executive compensation packages were increasingly linked to these metrics in order to achieve incentive alignment. Wall Street analysts often used the same metrics to compare firms within or across industries or markets. Over time, these practices also came to be used in evaluating alternative projects or products within a company.

Capital efficiency metrics were designed by analysts to look at a company's performance relative to employed capital, thereby encouraging managers to consider opportunity cost when making decisions. Consider, for example, the apparel industry. Since capital efficiency metrics evaluate operations with respect to capital usage, not just COGS, Gross Profit, or EBITDA, if a product goes out of style the company will be encouraged to use the capital more efficiently by salvaging (disposing of) the product below cost and either reinvesting in new products or servicing debts. A company concerned only with COGS or profit might be reluctant to sell inventory below cost.

In addition to their use in comparing value-creation among alternative investments, capital efficiency metrics were also used when determining a company's future: if capital employed did not generate acceptable returns after consideration of the cost of that capital, ending operations and/or selling the assets became increasingly attractive, especially to outside stakeholders.

In industries with high capital intensity and a resultant cost structure where fixed costs were much greater than variable costs, capital efficiency metrics – because they take into account the amount and implicit cost of the capital utilized -- were preferred. Aerospace is one example of this type of industry. In aerospace, R&D costs are high, the physical size of the product often meant significant real estate was needed for manufacturing and assembly, and the engineering and manufacturing equipment required was both extensive and expensive.

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Professor Willy Shih and HBS Post-doctoral Fellow Margaret Pierson prepared this note as the basis for class discussion.

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### *Common Capital Efficiency Metrics*

Stakeholders – be they public shareholders, private equity firms, venture capital firms, or the corporate CFOs of conglomerates and large holding companies -- ultimately have the option of moving their capital to alternative investments, so they are very interested in comparing the marginal return on a dollar invested in one company to a dollar invested in another. Companies suffer in capital markets when investors are dissatisfied with the use of invested capital.

While there are some subtle nuances in what constitutes a company's capital employed, in broad terms we can calculate it in three ways: a) the total assets of a company minus its current liabilities; b) its working capital plus its net fixed assets; or c) the sum of its debt plus its equity. This number is variously called "net assets," "employed capital," or "invested capital." We will use the three terms interchangeably.

There are two broad measures of capital efficiency in use today: Return on Net Assets ("RONA") and Economic Value Added ("EVA")<sup>1</sup>

**Return on Net Assets ("RONA")** – also referred to as Return on Invested Capital ("ROIC") – is the ratio of income generated to capital employed, expressed as a percentage. When using this ratio it is important to be very specific about whether the income number is net income, operating income, or EBITDA. One common calculation of RONA is simply:

$$\text{RONA} = \text{Net Income} / \text{Net Assets (which is an after-tax, after-interest form of the metric)}$$

Another common form of this calculation is:

$$\text{RONA} = \text{Net Operating Profit After Taxes ("NOPAT")} / \text{Net Assets (an after-tax, before-interest form of the metric)}$$

In practice, a stakeholder would compare the RONA or ROIC of an investment to that of other possible investments (either alternative projects within a company or alternative companies) to decide whether to proceed, or where to 'draw-the-line' if project requests exceed the capital available. In the extreme, if the RONA were below the minimum acceptable ROI level (often the risk-adjusted WACC) they would exit that investment – selling the stock, selling the investment/business, or closing it down – and redeploy the capital elsewhere (or return it to the investors).

**Economic Value Added** is an absolute amount rather than a percentage ratio, and is meant to show the dollar value that has been created from a company's operations. It is generally calculated as:

$$\text{EVA} = \text{NOPAT} - \text{Cost of the Capital Employed [WACC} \times \text{Invested Capital]}$$

The EVA measurement can be thought of as net operating profit after taxes and capital costs.

An EVA value greater than zero suggests the company is creating value. A negative value means that a company is operating at a loss after accounting for the cost of capital. If one considers the cost of capital as a proxy for the opportunity cost to investors of capital employed, a negative EVA suggests an erosion of invested capital. In the extreme, an investor or manager would want to de-emphasize/exit businesses that consistently have negative EVAs and would want to emphasize actions and businesses that grow EVA.

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<sup>1</sup> EVA is a registered trademark of Stern Stewart, a consulting firm.

### *Capital Efficiency Metrics in the Aerospace Industry*

In the aerospace industry in the early 1990s, some companies had developed a strong linkage between executive compensation and corporate performance measures. Gary Lyons, director of research and development for Institutional Shareholder Services, Inc. (ISS) was quoted in *Aviation Week* lauding McDonnell-Douglas:<sup>2</sup>

Its annual incentive award is based 40% on return on net assets, 30% on cash flow and 30% on specific improvements in quality as judged by an outside panel. Long-term compensation is restricted stock, which is based solely on return on net assets.

That's more the exception ... We've found a lot of aerospace companies tying executive compensation to performance measures in a very perfunctory way. Some of those measures amount to no more than giveaways.

*Aviation Week* also reported that many companies that were considering tightening their pay-for-performance criteria were examining EVA. Quoting Fiona McDonald of Los Angeles-based Management Compensation Group, "EVA is the perfect candidate for aerospace companies, because it is most effective in capital-intensive operations where there are multiple lines of business. We are talking with a number of companies about adopting it." McDonald predicted that more and more aerospace contractors would employ EVA because it was such a good measure of business performance, and therefore better criteria on which to base executive pay. "The trend is definitely toward management-by-performance, which is relatively new to the aerospace industry," she added. "Before, entitlements were more the rule, especially when it came to bonuses."

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<sup>2</sup> "Industry Scorecard '94 - Pay for Aerospace CEOs under increasing pressure," *Aviation Week & Space Technology*, Vol. 140, No. 22 (May 30, 1994) p. 22