Economic Value Added

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INTRODUCTION

In the Nineties, a new index, the Economic Value Added (*EVA*), was proposed in order to measure the value of a firm: it is defined as the difference between the operating profits and the cost of the capital used to obtain them. *EVA* was proposed for the first time by Gordon Bennett Stewart in 1991 (Stewart, 1991): such a valuation model quickly became very successful both from a theoretical and an operative point of view (see, among others, Allman (2010), Das and Pramanik (2009), Relly (2010), Stegmann (2009) and Thomas and Gup (2009)). The *EVA* method emphasizes, better than other current methods, the capacity of a company to produce earnings in the future. Today *EVA* is regarded to be much more than a simple mathematical derivation: it is considered a cornerstone of the management strategy by a significant portion of business agents.

According to *EVA* valuation, the market value of a firm is the sum of its initial economic book value and the sum of the present values, evaluated at weighted average cost of capital (*WACC*), of the *EVA*s of all the future periods.

The *EVA* valuation of a firm is equivalent to the one based on the Net Present Value (*NPV*) of a particular financial project and precisely coincides with the sum of the economic book value and the *NPV*, evaluated at *WACC*, of a financial project whose cash flows are the differences of net operating profits after taxes and net new capital invested for growth at every successive date, that is the free cash flows (*FCF*) of the company. An important distinction between the two concepts needs to be addressed: the *EVA* principle relies on accounting figures, whereas *NPV* approach is based on market values. Furthermore, *EVA* seems to provide more immediateness and incisiveness than *NPV*.

In the next sections, we will illustrate the concept of *EVA* and will express *EVA* in terms of *NPV* and of the so-called Value-Driver model *à la* Modigliani-Miller. A comparison between *EVA* and *NPV* and a brief discussion about the financial meaning of *EVA* conclude the chapter.

BACKGROUND

A first comparison between the market value of a firm as the present value of expected dividends, as in neoclassical models, and as the economic book value plus the present value of future expected residual incomes is developed in Peasnell (1982) and in Ohlson (1995) who, together with Edwards and Bell (1961), gave origin to the residual income valuation.

About *EVA* and, in particular, about the equivalence between *EVA* and *NPV*, a huge literature exists, including studies which challenge Stewart's claims (see, among others, Abdeen and Haight (2002), Biddle et al. (1997), Dodd et al. (1996), Mäkeläinen (2002) and Shrieves and Wachowicz (2001)). Adserà and Viñolas (2003) well emphasize that the two methods, although frequently assumed to be equivalent, require relevant adjustments to produce consistent conclusions.

Besides a wide theoretical debate about the validity of *EVA* as value indicator (see, for instance, Dierks and Patel (1997) and O'Byrne (1999)), improvements and specifications concerning the proper quantities to be considered, for instance about accounting data, have been proposed (see,

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among others, Cheremushkin (2008) and Warr (2005)). The model has been introduced in different fields such as banking and actuarial disciplines (see, for instance, Collins (1995)) and many empirical studies have been presented (see, among others, Kleiman (1999) and Milano (2000)).

MAIN FOCUS

The basic idea of *EVA* is very simple. *EVA* is defined as the period (yearly) operating profit net of the cost of all the needed capital.

1. In one period case (for instance, one year), if *C* is the economic book value of the capital committed to business at the beginning of the period, the rate of return of total capital can be defined as:

$$r = \frac{NP}{C}$$

where *NP* represents the net operating profit after taxes (Nopat).

Preliminarily, observe that *NP*, unlike the Return on Equity (*ROE*), does not vary if *C* is formed only by Equity (*E*) or by Equity and Debt (*D*). Let c^* be the (modified) *WACC* which also takes into account saved taxes due to interest expenses:

$$c^* = \frac{Ei + D\delta\left(1-\tau\right)}{E+D}$$

where *i* is the opportunity cost of equity, δ is the cost of debt and τ is the tax rate.

By definition, it is:

$$EVA = \left(r - c^*\right)\ C$$

where c^* is the (modified) *WACC* at time $t = 0$.

Now, consider the well-known notion of *NPV*, the sum of present values of the cash flows, discounted at a fixed rate, of a financial project.

If *EVA* is discounted at *WACC*, it coincides with the *NPV* of a project in which *C* is paid in $t = 0$ and $C(1+r)$ is received in $t = 1$:

$$\text{discounted } EVA = \frac{\left(r - c^*\right)\ C}{1+c^*} =$$
$$-C + \frac{\left(1+r\right)\ C}{1+c^*} = NPV\ \left(c^*\right)$$

2. In the case of several periods, call:
   a. NP_s the Nopat of the *s*-th period;
   b. C_{s-1} the starting capital at time *s,* that is the sum of the economic book value C_0 at $t = 0$ and all the next investments up to *s-1* included;
   c. r_s the rate of return of the *s*-th period, that is $r_s = NP_s/C_{s-1}$;
   d. EVA_s the *EVA* of the *s*-th period, that is:

$$EVA_s = \left(r_s - c^*\right)\ C_{s-1}$$

The market value of a firm *V* is defined as the sum of its economic book value C_0 and its Market Value Added (*MVA*), that is the sum of the present values, valued at c^* , of all future *EVA*s:

$$V = C_0 + MVA = C_0 + \sum_{s=1}^{+\infty} \frac{EVA_s}{\left(1+c^*\right)^s}$$

Example - Let C_0 = 1,000, NP_1 = 150 and *WACC* = 0.05. It is:

$EVA_1 = (0.15 - 0.05)1{,}000 = 100$