Fairness Finance methodological note 0

Glossary

The terms used on our website and in our methodological notes are defined below.

- **Unlevered:** describes any financial indicator calculated after neutralizing the effect of financial debt. For example, unlevered net income is equivalent to net operating profit after tax (NOPAT). Or, the unlevered enterprise value is equivalent to shareholders' equity value in the absence of financial debt and non-operational assets.

- **APV approach:** the adjusted present value approach corrects cash flow forecasts for several kinds of risk, particularly the one resulting from debt, rather than adjusting the discount rate. For example, in order to account for financial debt, *unlevered cash flow* is increased to reflect the positive effect of tax-shield savings and decreased by the negative effects of: i) the systematic cost of leverage (SCL); and ii) the expected cost of default(LCD).
  See methodological note 5.

- **Beta:** in the sense of the capital asset pricing model (*CAPM*) the beta, β, or systematic risk coefficient, is the variable that determines the expected return for a risky financial asset. Each sector beta provided on our website is calculated on the basis of the sector portfolio's monthly returns over the past three years. These returns correspond to the average returns of the companies in the portfolio, weighted by the prevailing market capitalization before calculating each price change.
  See note 6.

- **Unlevered beta:** deducted from the *beta* of a listed share (which is affected by the company's leverage) by applying the Robert Hamada formula (1972) that links the company's leverage and the systematic risk of its stock. For companies with surplus cash, this cash is considered a risk-free asset, distributable after tax.
  See notes 5 and 6.

- **Forecast biases:** according to the *CAPM*, forecast cash flows contributing to expected stock returns are mathematical expectations. However, the cash flow forecasts available to us are almost exclusively conditional expectations in the event of companies' survival. Therefore, they do not take into account any/sufficient probabilities of default, which are negligible only for a tiny minority (benefiting from the equivalent of an AAA rating). On the other hand, forecasts in the case of company's survival are themselves tainted by an optimistic bias. This explains why the *expected market return* is less than the *implied cost of capital* that we calculate, to correct these forecast biases.
  See note 3.

- **CAPM:** the capital asset pricing model defines the return expectancy of a risky financial security, $\mathrm{E}(R_i)$, by a linear relationship in which its *beta* (β_i) is the explanatory variable, the *CAPM risk Premium* (Π_R) the slope and *the risk-free rate* (r_f) is the intercept:

$$E(R_i) = \beta_i \times \Pi_R + r_f$$

  It should be noted that since the market beta equals 1, the *expected market return* is equal to the sum of the *CAPM risk premium* and the *risk-free rate*. The CAPM requires that the flows that help make up the expected returns are mathematical expectations. If this is not the case, then the *cost of capital* required to

discount cash flows forecasts is different from the expected return.
See note 1.

- **Firm cash flow:** FCF (unlevered cash flow or cash flow from operations). Unlike *equity cash flow*, this is calculated without taking into account after-tax financial expenses or the change in net debt. FCF is discounted at the *WACC* rate in a DCF model. It is also used in the *APV* approach.
  See notes 1 and 5.

- **Equity cash flow:** ECF is free cash flow to equity. It corresponds to the cash earnings adjusted for: i) changes in working capital requirements; ii) investments net of proceeds from the disposal of fixed assets; and iii) the share of these marginal assets needs that can be financed by debt (taking into account a target leverage, for instance). ECF cannot be permanently higher than the net result of a company, otherwise its equity would become negative. In addition, a reinvestment in equity may be taken into account when there is a prudential constraint, which is thus included in our cash flow forecast calculation model for the banking and insurance sectors.
  See note 2.

- **Implied cost of capital:** k_L is the IRR which equates the discounted present value of the *equity cash flows* forecasts and the market capitalization of each of the companies included in our samples. The average of these IRRs, weighted by capitalizations, is the market implied cost of capital. This is the average rate required to discount future cash flows. As these flows are tainted by *forecast biases*, the implied cost of capital is higher than the market *expected return*.
  See notes 2 and 3.

- **Market expected return:** $\mathrm{E}(R_M)$ is the expected return on the equity market as it results from our model of *implied cost of capital* based on sell side analysts' cash flow forecasts. To the extent that cash flow forecasts are not strict mathematical expectations, the market return expectation is different from the market implied cost of capital. In the Fairness Finance model, the market return expectancy is equal to the sum of the *CAPM risk premium* and the *risk-free rate*: $\mathrm{E}(R_M) = \Pi_R + r_f$; or the implied cost of capital less i) the default risk premium and ii) the risk premium for optimism bias;

$$\mathrm{E}(R_M) = k_L - \Pi_d - \Pi_O$$

  See notes 2 and 3.

- **Risk premium for optimism bias:** Π_O is an additional risk premium that corrects a systematic *forecast bias* on the part of financial analysts (internal and external). Indeed, the forecasts that we use, which generally assume a company's survival (not adjusted for default risk) are furthermore overly optimistic. Π_O corrects this average optimism bias in analysts' cash flow forecasts. Any reasonably optimistic forecast should therefore be discounted at a rate including this premium that corrects the average bias observed for the overall market.
  See note 3.

- **Default risk premium:** Π_d is an additional risk premium that corrects the systematic *forecast bias* financial analysts tend to have (internal and external). If a company's cash flow forecasts are not adjusted for default risk, then Π_d should be included in the calculation of the discount rate. Π_d is the weighted average premium of the companies included in our sample, which corresponds to a BBB rating.
  See note 3.

- **Market Equity risk premium:** Π_E is the total gap between the *implied cost of capital* (k_L) which we calculate using the market's IRR, and the *risk-free rate* (r_f). In the Fairness Finance model, the market risk premium equals the sum of the *CAPM risk premium stricto sensu*

and the *forecast biases* premia including the *default risk premium* (Π_d) and the *risk premium for optimism bias* (Π_O).

$$\Pi_E = k_L - r_f = \Pi_R + \Pi_d + \Pi_O$$

See note 3.

- **CAPM risk premium:** Π_R is the gap between the *market's expected return* and the *risk-free rate*; $E(R_M) - r_f$. In the Fairness Finance model, which corrects for *forecast biases*, the market return expectation is lower than the *implied cost of capital*.
  See note 3.

- **Size risk premium:** Π_L is the average positive return gap between a company smaller than the market index average and the market's *implied capital cost*, k_L. According to the Fairness Finance methodology, this is a residual difference which is not explained by systematic risk (*beta*) or debt leverage.
  See notes 3 and 4.

- **Risk free rate:** r_f is the yield on fixed-rate government bonds with a 10-year maturity. For our Europe sample, we use a basket of eurozone bonds rated at least AA for which the returns are weighted by the contribution of these states to our basket's GDP. For the North America sample, these are the treasury bonds issued by the federal government of the United States. For the record, forecasts outside the eurozone (notably in sterling) are converted into euros. Likewise, data in Canadian dollars are converted to US dollars.

- **WACC:** the weighted average cost of capital is equal to the average of the cost of equity and the cost of financial debt after tax, each of which is weighted by its share in enterprise value:

$$WACC_i = k_{e,i} \times \frac{E}{EV} + k_{D,i}(1 - Tx) \times \frac{D}{EV}$$

where $WACC_i$ denotes the weighted average cost of capital of the company "i", EV the enterprise value of the latter, E the market value of its equity (as calculated in the DCF model), D the amount of net debt, $k_{e,i}$ the cost of equity and et $k_{D,i}$ that of debt. As a reminder,

$$E + D = EV$$

See note 1.