



Fairness Finance's Aggregation Model to Determine Equity Risk Premium

1. Commonly used valuation models have their limits

Most appraisers determine a return on equity using the capital asset pricing model (CAPM) which provides a simple and direct relationship between a share's return and its systematic risk. This analysis, regardless of how it is calculated, discounts idiosyncratic risks as negligible because they are diversifiable. However, in practice, analysts have seen that other macroeconomic, accounting or specific market risk factors (anomalies) such as size risk lead to greater required returns on equities.

Alternative methods based on these observations such as arbitrage pricing theory¹ or the three-factor model² have not provided significantly better results than the CAPM, and most models do not satisfactorily deal with analyst forecast bias and the default risk for shareholders. ***Fairness Finance calculates its risk premium according to the latest financial theories, combining accounting, fiscal, statistical and economic expertise to solve this problem.***

2. The Fairness Finance solution

Fairness Finance has created a new aggregation model to supply appraisers with an implied market risk premium each month. Aggregation means that the Fairness Finance market risk premium supplements the CAPM's premium with risk factors that have a direct and explicit impact on discount rates. Certain aspects of the calculation of these added premiums break with traditional valuation models.

Behavioral finance has clearly demonstrated that biases exist. Accordingly, the Fairness Finance model takes into account the optimism bias in analyst forecasts.

¹ Ross, S.A., *The Arbitrage Theory of Asset Pricing*, Journal of Economic Theory, 1976

² Fama, E.F., French, K., *The Cross Section of Expected Stock Returns*, Journal of Finance, 1992



Using a large database culled from a broad sample of companies listed on the European and North American markets, Fairness Finance calculates an optimism premium by analyzing forecasts from the past five years vs the actual performances achieved.

Moreover, bond valuations are currently completely separate from equity valuations. Consequently, equity valuations do not accurately integrate the extent to which the level of a company's debt increases the default risk for shareholders. One key aspect of the Fairness Finance model is that it takes this default risk into account.

Fairness Finance also adds a size premium for returns on the smallest market capitalizations³. The method used by Fairness Finance to calculate its size premium is different from other valuation models because it aims to strip out all other factors such as systematic risk.

3. Fairness Finance's risk premium is consistent with market data

Fairness Finance tests each parameter to ensure consistency (on the one hand with historical data and on the other with forecasts) particularly for implied default probability.

Moreover, Fairness Finance pays rigorous attention to current developments and is constantly updating its research to confirm its model's accuracy and strength.

The expertise acquired by Fairness Finance and its hefty database results in more accurate measurement of these various premiums, especially the size premium, as it breaks them up into sufficiently diverse quantiles to arrive at conclusions that are statistically and economically sound.

³ Banz was the first to document the size effect in 1981 while Fama and French (1992) were the first to measure the sensitivity of discount rates to the size effect with their three-factor model.



The track record of premiums that Fairness Finance has produced and the actual results of companies allow for adjustments for different kinds of bias in the case of exceptional events, such as the subprime crisis.

4. An easy to use model.

Based on the premium that Fairness Finance supplies each month, investors can easily calculate an equity discount rate.

The formula used to determine the cost of capital to evaluate a company's equity is the following: $k = r_f + \beta\pi_r + \pi_d + \pi_o + \pi_L$

with $\left\{ \begin{array}{l} r_f, \text{ the risk free rate, } \pi_r, \text{ the systematic risk premium, } \beta, \text{ the beta specific} \\ \text{to the stock, } \pi_d, \text{ the default premium, } \pi_o, \text{ the optimistic bias premium} \\ \text{and } \pi_L, \text{ the size premium.} \end{array} \right.$

In short, Fairness Finance provides a comprehensive risk premium that integrates forecast bias, a default premium and a size premium. In addition, all of this is based on calculations that use a maximum of available accounting, financial, fiscal, historical and prospective data as illustrated below.

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