

Capital Budgeting and Project Financing in Equity-based Economies

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ABSTRACT

A framework for determining the required rate of return for project financing in Islamic or equity-based finance is suggested. The *zakat* requirement is used as a proxy for the risk-free rate in the security market line of modern corporate finance. An Islamic version of the security market line is proposed, which facilitates the estimation of required rates of return for project financing using the security market line concepts of modern corporate finance. In equity-based finance, compared to conventional finance, riskier projects are discouraged, while safer projects are encouraged. These results are consistent with the Islamic philosophy of discouraging risk shifting and encouraging risk sharing, the essence of equity-based financing.

I. INTRODUCTION

The prohibition of usury (*riba*) in Islam led to the development of interest-free banking and finance, also known as Islamic finance, or equity-based finance (EBF). Although it is evolving, EBF is widely practiced in many countries. If EBF is a special case of modern corporate finance (MCF), as it arguably is, the practitioners of EBF can benefit from the tools and techniques of MCF. However, some adjustments are called for. EBF must use only instruments approved by *Shari'ah* boards. This prohibits use of any debt instruments. Financing and working capital decisions in EBF must overcome the absence of debt instruments or devise a satisfactory alternative to fully benefit from the advances in MCF. Before the benefits of MCF can be reasonably integrated into EBF, a few fundamental issues must be resolved. One of them is the choice of securities in the absence of debt instruments. Only then can practitioners of EBF proceed with decisions about capital structure, the cost of capital, capital budgeting, and project financing.

II. THE SECURITY MARKET LINE

The security market line (SML) of MCF establishes a risk-return relationship between projects, assuming beta is a reliable measure of risk. The SML connects the yield of a risk-free security to the market return, plotted on the risk domain described by beta. Thus, the SML provides a linear relationship between risk and return:

$$\begin{array}{l} k_j = k_{RF} + (k_M - k_{RF}) \times b_j \\ \text{where } k_j = \text{required return} \\ k_{RF} = \text{risk-free security} \\ k_M = \text{market return} \\ b_j = \text{beta or relative risk of a security } j \text{ compared to the market} \end{array} \quad (1)$$

Under EBF, there are no debt securities, let alone a risk-free security (k_{RF}), since governments are not allowed to borrow. Therefore, the SML relationship that MCF describes is impossible in EBF. The SML relationship changes to:

$$k_j = k_M \times b_j \quad (2)$$

Therefore, without a SML, the required return on projects becomes a risk-multiple of market returns. The resulting required return (hurdle rate) will be much higher in EBF, resulting in a very high rejection rate for even relatively risk-free projects. One solution is to find an equivalent proxy for a risk-free security that is acceptable

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under EBF. The lower hurdle rate that results is more realistic, and will allow more projects in Islamic countries to be accepted.

III. RISK-FREE SECURITY

The risk-free security in MCF is defined as a short-term debt instrument with no probability of default. The rate varies among countries, depending on, for instance, the supply and demand of funds and inflation rates. However, the attributes of this money-market instrument include liquidity, safety, and an opportunity cost for idle funds. While invested capital is exempt from *zakat*, income from such investments is not. With that fact in mind, the non-invested or idle wealth, which in Islam is subjected to *zakat*, results in a cash outflow of 2.5%. Putting aside the charitable aspects of *zakat*, the opportunity cost of idle funds is -2.5%. This is a riskless rate, since for idle funds there is neither any uncertainty about this rate, nor are there any exemptions from paying it. *Zakat* is usually paid in the form of liquid or short-term assets, such as cash.

The inflation rate could be a strong contender for a risk-free security in EBF. After all, the risk-free rate in MCF includes the real rate, plus the inflation rate. But because earning a real rate through lending is forbidden, the only alternative is to use the inflation rate to preserve the purchasing power of idle money. However, variable returns indexed to uncontrollable indices are also not allowed in Islam. Therefore, *zakat* seems to be the only viable proxy for the risk-free rate.

IV. THE ISLAMIC SECURITY MARKET LINE

Under Islamic finance, one can argue that *zakat* qualifies as a proxy for the risk-free rate by constructing the Islamic security market line (ISML). The ISML relationship can be described as:

$$\begin{aligned} k_j &= -Z + (k_M - (-Z)) \times b_j \\ &= -Z + (k_M + Z) \times b_j \end{aligned} \quad (3)$$

The ISML has several noteworthy attributes:

The intercept is now lower [$(-Z) < k_{RF}$].

The slope is now steeper [$(k_M + Z) > (k_M - k_{RF})$].

There can be a conflict in the ranking of projects under the SML and the ISML, depending on the beta of the projects.

a. when $\beta = 1$,

$$\text{SML: } k_j = k_{RF} + (k_M - k_{RF}) \times b_j = k_{RF} + k_M - k_{RF} = k_M \quad (4)$$

$$\text{ISML: } k_j = -Z + (k_M + Z) \times b_j = -Z + k_M + Z = k_M \quad (5)$$

The required return is same under both methods.

b. when $\beta > 1$,

$$[\text{SML: } k_j = k_{RF} + (k_M - k_{RF}) \times b_j] < [\text{ISML: } k_j = -Z + (k_M + Z) \times b_j] \quad (6)$$

The required return under the ISML is greater than that under the SML.

c. when $\beta < 1$,

$$[\text{SML: } k_j = k_{RF} + (k_M - k_{RF}) \times b_j] > [\text{ISML: } k_j = -Z + (k_M + Z) \times b_j] \quad (7)$$

The required return under the ISML is less than that under the SML.

Projects that are riskier than the market have higher hurdle rates under EBF than under MCF (equation 6). Similarly, projects that are less risky than the market have lower hurdle rates under the EBF than under MCF (equation 7).

V. CONCLUSION

Zakat is a universal rate. Therefore, the use of *zakat* as a proxy for the risk-free rate provides a global model for uniformity, particularly for multinational enterprises. Projects in the many Islamic countries can be more readily evaluated and ranked when the Islamic SML is applied in capital budgeting.

The use of ISML lowers the cost of capital compared to all other equity approaches to the calculation of the cost of capital. This model incorporates the opportunity cost of idle cash. The result is a lower cost of capital, and a higher net present value in project appraisal.

In EBF, compared to MCF, riskier projects are discouraged, as their net present values decline due to higher hurdle rates. Similarly, safer projects have a better chance of being accepted due to their relatively higher net present values as lower hurdle rates are applied. These results are consistent with the Islamic philosophy of discouraging risk shifting and encouraging risk sharing, which is the essence of equity-based financing.

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