

The Benchmark Issue in the Islamic Financial System

Zamir Iqbal

This paper identifies a major lacuna in the conceptual development of Islamic financial market operations. It argues that in the absence of a well developed benchmark that would facilitate macro- and micro-level decision making with regards to cost of capital and opportunity cost of investments in comparative projects of similar risk, Islamic financial institutions are relying on interest rate-based indices such as the London Inter-Bank Offer Rate (LIBOR) to make lending decisions. The author contends that this is clearly unacceptable since Islam disallows a pre-determined or fixed rate of capital. The paper then proposes a benchmark based on *Tobin's q theory of investment*. The author further maintains that unlike existing alternatives which are limited to macro-level applications only, the q-based benchmark would be useful for firms and banks (micro-decisions) as well as governments and institutions (macro-planning).

Background

An Islamic financial system requires elimination of any fixed and pre-determined interest rate and thus closes the door to any form of debt instruments. Instead, it promotes equity participation and direct sharing of risks and rewards. In simple terms, although the system prohibits a fixed and predetermined interest rate on capital, it fully recognizes return on investment. As compared to a conventional debt-based system where capital is rewarded on the basis of a rate fixed *ex-ante* or determined by the expectations of the future demand and supply of capital, an Islamic system calls for rewarding the capital on the basis of *ex-post* (actual) return on capital. Whereas market interest rate plays the role of an equilibrium rate for

financial intermediation and a benchmark for making efficient investment decisions in a conventional system, so far no equivalent substitute has been available for an equity-based system to determine the internal rate of return or the marginal efficiency of investments.

The Islamic financial system recognizes that investment decision-making will have to be based on the concept of rate of return on capital as it participates in real sector activities and not on the opportunity cost of capital as represented by the interest rate. Though discounting expected future stream of cash flows based on a risk-adjusted expected rate of return does not violate any Islamic principle, and standard techniques for project evaluation are acceptable, the issue is how to determine the so-called "risk-adjusted expected rate of return," or cost of capital, in the absence of a system-wide benchmark or reference rate.

Thus far, the literature on Islamic economics and finance has not developed techniques to determine a rate of return at the firm (micro) or economy (macro) level so that investments can be compared for efficient allocation of capital. In the absence of such a reference rate or benchmark, Islamic financial institutions have resorted to adopting a proxy rate borrowed from their counterparts in the conventional system. It has become a common practice to use the London Inter-Bank Offer Rate (LIBOR) as a reference rate for mark-up instruments or a benchmark to price trade financing instrument and Islamic leasing funds. Without a doubt, this practice is questionable and raises several concerns. Practitioners claim that this arrangement is temporary until a better substitute and viable solution is offered. This paper summarizes the findings of a recent research proposing a model for determining the cost of capital in an economy where debt-instruments are eliminated. This model is based on *Tobin's q theory of investment* and attempts to devise a benchmark compatible with the Islamic financial system.

Current Practice

Currently, Islamic financial markets are dominated by short-term trade financing instruments. According to some estimates, 80 percent of investment is being channeled through the "cost-plus" (*murabaha*) mode of financing. The common practice in the market is to use the LIBOR as the reference rate for mark-up. Similarly, the LIBOR is used for pricing and measuring the performance of Islamic leasing funds. In the absence of LIBOR, the prevailing market interest rate would serve the same purpose.

Historically, several factors have contributed to the establishment of this practice. First, Islamic financial institutions required a common reference rate to integrate with international capital markets. Second, as Western banks entered into the Islamic financial markets, they required a comparable benchmark against their cost of funding in the conventional system, which happened to be the LIBOR. These institutions treated the *murabaha* mode as synonymous with the conventional money market, which was based on the LIBOR.¹ Finally, in those markets where Islamic financial institutions coexisted with conventional banks, the LIBOR became a benchmark for competition in attracting depositors.²

The prevalent practice is defended by the arguments that, in the case of the *murabaha* mode of financing, a practice to charge the LIBOR-based "mark-up" is still Islamic because it is part of the sale agreement price between two parties; and, in case of leasing funds, the LIBOR is used for pricing and performance measurement purposes only and does not influence the actual rate of return on the investment.³ Further, the LIBOR provides price transparency and global real-time accessibility, which facilitates ease of operation and integration of Islamic and international financial markets.⁴

Irrespective of various justifications provided for the practice, obviously the use of any interest rate as part of a mark-up (pricing or performance) is not acceptable because interest rate does not represent real rate of return in the economy as intended by Islamic principles. Although ease of use is the reason cited, the real reason is the lack of a more suitable measure. Finding a practical solution for a benchmark compatible with Islamic principles requires an understanding of the concept of cost of capital in the context of an Islamic financial system. The cost of capital provides a common reference point for comparing heterogeneous investments and provides insight into how firms make investment decisions.

Cost of Capital in an Islamic Financial System

By prohibiting interest, Islamic injunctions do not imply that the opportunity cost of capital represented by interest rate in a conventional system is zero. In an Islamic framework, the incentive for the firm to invest will solely depend on prospective profitability. A profit maximizing firm will continue investing until the marginal productivity of capital becomes equal to the opportunity cost of capital; therefore, "cost of capital" in the Islamic system can be represented by the rate of return on alternate opportunities

for investment of comparable risk.⁵ It has also been demonstrated that there is a rate of return in Islamic capital markets serving opportunity cost of capital, and this rate of return is also closely related to the rate of return in the real sector of the economy.⁶

In the Islamic financial system, determination of prospective profitability and the rate of return on investments of the same risk class plays a pivotal role in determining the relative cost of capital. Tobin's q theory of investment suggests the use of information in asset markets, especially the stock market, in knowing the profitability of investment. The theory relates investment to the ratio of market to replacement value of capital and suggests that when the stock market functions properly, the future profitability of investment will be solely summarized by q.⁷ It is a simple arbitrage argument. If the market valuation of capital held by a firm exceeds the cost of capital on the open market, then the firm can increase its value by investing.⁸ Tobin argues that if q exceeds unity, the value of capital investment would exceed its costs, and the firm would have incentive to invest.

A recent model presented by Mirakhor utilizes this concept of q in deriving the cost of equity capital of a firm in the Islamic financial system.⁹ In its simple form the model states:

$$\rho = (Y / V) (1 - d + dq)$$

where

- ρ = Firm's cost of capital or shareholder's required rate of return.
- Y = Value of expected earnings for the next year.
- V = Present value of the firm's stock of capital. Since there is no debt financing in the Islamic system, it is equal to value of the firm.
- d = Sum of fraction of expected earnings retained by the firm and the expected rate of stock financing expressed as ratio of firm's expected earnings.
- q = Firm's q ratio.

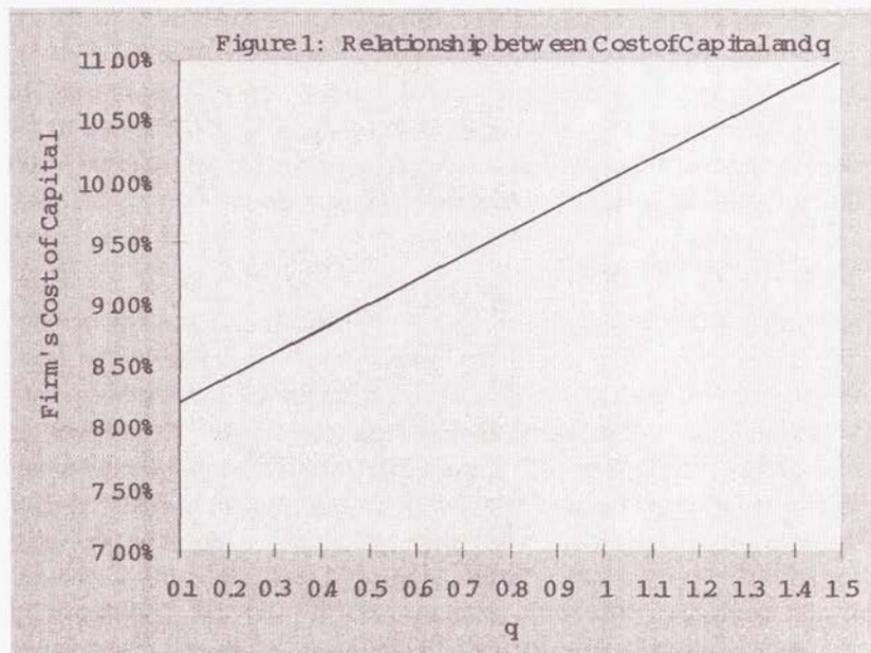
The model implies that a firm's cost of capital (ρ) is a function of a firm's q ratio and the firm's market value (V), stream of expected future earnings (Y), ratio of retained earnings, and new stock financing. The q ratio can be simply derived by dividing the value of the firm (V) determined by the market price of the firm's stock by the replacement costs of firm's assets such as equipment, land, receivables, and marketable securities. The cost of capital will fluctuate with the fluctuations in the q ratio, thus signaling the prospects of an investment project.

For example, we are interested in finding the cost of capital for a firm with future expected earnings for next year (Y) of \$1,000,000 and equity value of \$10,000,000 (since there is no debt financing, value of the firm is equal to equity value). Based on the historical data, it is known that the firm finances future projects through retained earnings and new equity issues amounting to 20 percent of its earnings ($d = .20$). If the firm's q ratio is 1, its cost of capital will be 10 percent as the following shows:

$$.1 = \$1,000,000/\$10,000,000 (1 - .2 + (.2 \cdot 1))$$

The figure below gives a graphical representation of cost of capital for the same firm with varying q ratios. It is obvious from the graph that cost of capital has a linear relationship with q . A firm with q lower than 1 will have a cost of capital lower than the return on equity (10 percent in this case) whereas, firms with q greater than 1 will require higher cost of capital.

A firm's market value reflects the profitability of existing capital. The q ratio is an indication of how much this market value can increase by additional investment, also known as marginal q . Marginal q — the ratio of market value of an additional unit of capital (shadow price of capital) to its replacement cost — is the critical determinant of the firm's investment



decision making but is not observable since the shadow price of capital is not observable. Instead, what is observable (in principle) is the average q — ratio of the market value of existing capital to its replacement cost.

Hayashi rigorously proved a relationship of average q with marginal q -based information in stock market valuation.¹⁰ A relationship of equality between average and marginal q will hold provided conditions of perfect competition in product market and linear function of homogenous technology of production and adjustment costs are satisfied. For competitive firms (price-takers), this relationship is strong because the unobservable shadow price is directly linked to the stock market valuation of existing capital. If one of these conditions is violated, then the average q is no longer equal to the marginal q ; however, a relationship may still exist. For example, in firms with monopolistic position (price-makers), average q is higher than marginal q by what is legitimately called the monopoly rent, and it is marginal q that is relevant for investment. Several empirical studies have utilized average q as a proxy for marginal q .

Pricing assets using q has several advantages over other methods.¹¹ First, the market value of the firm is an indicator of future profitability as perceived by investors' expectations rather than the past performance of the firm. Second, since market value is subject to adjustment by variations in expected profits, q incorporates an automatic adjustment for risk independent of any methodology employed by capital markets to determine risk premium. The value of q should be equal to unity only if profits are high enough to compensate for shareholders risks. Finally, as compared to other asset pricing models (capital assets, arbitrage, or option pricing models), a model based on q is subject to less measurement errors.

Implications of Model

Deriving a firm's cost of capital without referring to a fixed and pre-determined rate such as an interest rate has immense implications for Islamic financial markets. Extensive research on q theory of investment suggests that it is possible to determine an industry-wide as well as an economy-wide q ratio. An industry-wide q ratio can very well serve the purpose of establishing the cost of capital for new firms entering the industry and as an indicator of efficiency relative to others in the same industry for existing firms.

Similar to the concept of an industry-wide q ratio, an economy-wide q ratio can be used to determine a rate that reflects economy-wide marginal

efficiency of capital or internal rate of return for efficient allocation of financial resources. Existence of an economy-wide benchmark has implications at both the micro- and macro-level. At the micro-level, such a benchmark can facilitate the pricing of assets, utilizing an equity-based reference rate. At the macro-level, it will help develop secondary markets, an Islamic money market, and an interbank market and contribute toward financial innovations. All these factors are known to be roadblocks to further development and growth of Islamic financial markets.¹²

Development of a secondary market will enhance liquidity in the market and provide an extended maturity structure to investors. Establishment of a money market and an interbank market will have a great impact on the way Islamic financial institutions operate, since the problem of unavailability of funds at extreme short maturity will be resolved. No doubt, the financial innovations during the 1980s and 1990s changed the international financial markets in a revolutionary fashion. Similarly, financial innovations will introduce new products to Islamic financial markets to equip borrowers and lenders with the tools to better manage business and financial risk.¹³

Another promising arena for applying an economy-wide q is in the way governments in Islamic countries formulate economic policies and raise funds for social sector projects. Central banks can perform monetary operations to achieve economic objectives by influencing q since this ratio is the principal link between the financial and real sector of the economy.¹⁴ Governments can finance public sector projects by issuing equity-based securities where expected dividend is determined by the market price of government securities (discounted value of streams of expected earnings at a prevailing rate of return) and social rate of return (discounted value of stream of expected earnings derived from government surpluses).¹⁵ Since q is the ratio of the social rate of return to the expected rate of return on financial capital, governments have an incentive to invest only if q exceeds unity. Investors will invest in equity-based government securities provided the rate of return is comparable to the market rate of return.

Concluding Remarks

Despite its considerable theoretical appeal, empirical evidence linking q to investment decision-making of firms has received mixed reviews in the literature.¹⁶ Using Japanese corporate data, a recent time-series study examined the roles of marginal q (based on time-series techniques) and average q (using stock market valuation) in the q -based investment function.¹⁷

Although the study found poor performance of investment function based on average q , it also found, as expected, that entrepreneurs attach much significance to q .¹⁸

Although the proposed q -based model is theoretically compatible with the Islamic financial system, one reservation about this approach could be that successful application of a model depends on the degree of development and efficiency in existing stock markets. Since most Islamic countries are developing countries where capital and financial markets are not fully developed and are not integrated with international financial markets, data are subject to noise and distortion, thus contaminating the information content of q and investors' decision making. This reservation is more valid and applicable in determining an economy-wide benchmark based on time series to calculate an average q ; however, it is not necessarily a barrier to calculating a q as a benchmark. This is particularly true for firms, banks, and even government projects, thus providing a benchmark conforming to Islamic principals, which excludes the fixed interest rate.

Recently, another model has been presented by Haque and Mirakhor to address the same benchmark issue.¹⁹ Unlike the q model, the Haque-Mirakhor model attempts to develop an economy-wide index based on major indicators of domestic and international equity market performance to serve as a benchmark for issuing government papers. The suggested index is designed as a weighted average of domestic stock market index, international equity returns, and return on government's development projects. Inclusion of both domestic and international indices make it efficient in terms of its ability to eliminate any arbitrage opportunity and discourages speculative behavior. A similar approach can be taken for determining a benchmark for the private sector. Whereas the Haque-Mirakhor model provides guidelines for a macro-level benchmark, the q -based model can still provide a benchmark at the micro-level.

Nevertheless, the concept of a q -based benchmark is a ground-breaking innovation that requires further refinement. Given the right set of parameters, it may help solve the problem of defining a benchmark for Islamic financial markets.

Notes

1. Richard Thomas, "London Interbank Offered Rate and Murabaha — Strange Bedfellows?" *Islamic Banker* 1 (October 1995): 11–12.

2. *Ibid.*

3. Adeel Siddiqi, "De-Linking Islamic Finance from LIBOR," *Islamic Banker* 1 (October 1995): 12–13.

4. Adeel Siddiqi, "The Question of a Benchmark in Islamic Finance," *New Horizon* 55 (September 1996): 4.
5. Fahim Khan, "Time Value of Money in Islamic Perspective," International Institution of Islamic Economics, International Islamic University, Islamabad.
6. Mohsin S. Khan and Abbas Mirakhor, "The Financial System and Monetary Policy in an Islamic Economy," in *Theoretical Studies in Islamic Banking and Finance*, ed. Mohsin S. Khan and Abbas Mirakhor (Texas: The Institute for Research and Islamic Studies, 1988).
7. Kazuo Ogawa and Shin-ichi Kitasaka, "Market Valuation and the q-Theory of Investment," Institute of Social and Economic Research Paper no. 383, Osaka University, July 1995, 1–38.
8. Ricardo J. Caballero and John V. Leahy, "Fixed Costs: the Demise of Marginal Q," National Bureau of Economic Research Working Paper Series No. 5508, March 1996, 1–19.
9. Abbas Mirakhor, "Cost of Capital and Investment in Non-interest Economy," *Islamic Economic Studies* 4 (December 1996): 35–46.
10. Fumio Hayashi, "Tobin's Marginal q and Average q," *Econometrica* 50, 213–224.
11. Mirakhor, "Cost of Capital."
12. Hossein Askari and Zamir Iqbal, "Emerging Opportunities in Islamic Financial Markets," *Banca Nazionale del Lavoro, Quarterly Review* 194 (September 1995).
13. Zamir Iqbal, "Islamic Financial Systems," *Finance and Development* 34 (June 1997): 42–45.
14. Abbas Mirakhor and Iqbal Zaidi, "Stabilization and Growth in an Open Islamic Economy," International Monetary Fund, WP/88/22, February 1988.
15. Nurun N. Choudry and Abbas Mirakhor, "Indirect Instruments of Monetary Control in an Islamic Financial System," International Seminar on Mechanism and Development of Islamic Financial Instruments sponsored by Bangladesh Bank and Islamic Research and Training Institution, Islamic Development Bank, Bangladesh, 14–16 May, 1996.
16. Fumio Hayashi and Tohru Inoue, "The Relation between Firm Growth and q with Multiple Capital Goods: Theory and Evidence from Panel Data on Japanese Firms," National Bureau of Economic Research Working Paper No. 3326, April 1990.
17. Although marginal q is not observable, by employing time-series techniques, Ogawa and Kitasaka defined marginal q as an expected present value of the future productivity of capital utilizing a stochastic process of discount factor and profit rate. The study found that both the average q and marginal q had a unit root, but the average q deviated from the marginal q, and a cointegrating relationship was not detected between the two q measures.
18. Ogawa and Kitasaka, "Market Valuation and the q-Theory of Investment."
19. Nadeem ul Haque and Abbas Mirakhor, "The Design of Instruments for Government Finance in an Islamic Economy," *IMF Staff Papers* 1998.

